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MANAGEMENT

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Feature

Managing a Revolution
By Rear Admiral
Albert Mumma

On The Cover

Rear Admiral Albert G. Mumma graduated from the U. S. Naval Academy in 1926 with distinction, 18th in his class of 456, and received an award for standing highest in the graduating class for the course in the Department of Engineering and Aeronautics. During World War II, he served in the Bureau of Ships and at the David Taylor Model Basin, concentrating much of his effort on improving propeller design and elimination of vibration, success in which led to a Letter of Commendation from the Secretary of the Navy for outstanding services.

He became Deputy Director of Ship Design in the Bureau of Ships after the war and in 1947 was named Deputy Coordinator for Nuclear Matters, with coresponsibility with the Coordinator for coordinating all nuclear matters involving the Bureau. His appointment as Chief of the Bureau of Ships was confirmed by the Senate on 26 April, 1955.

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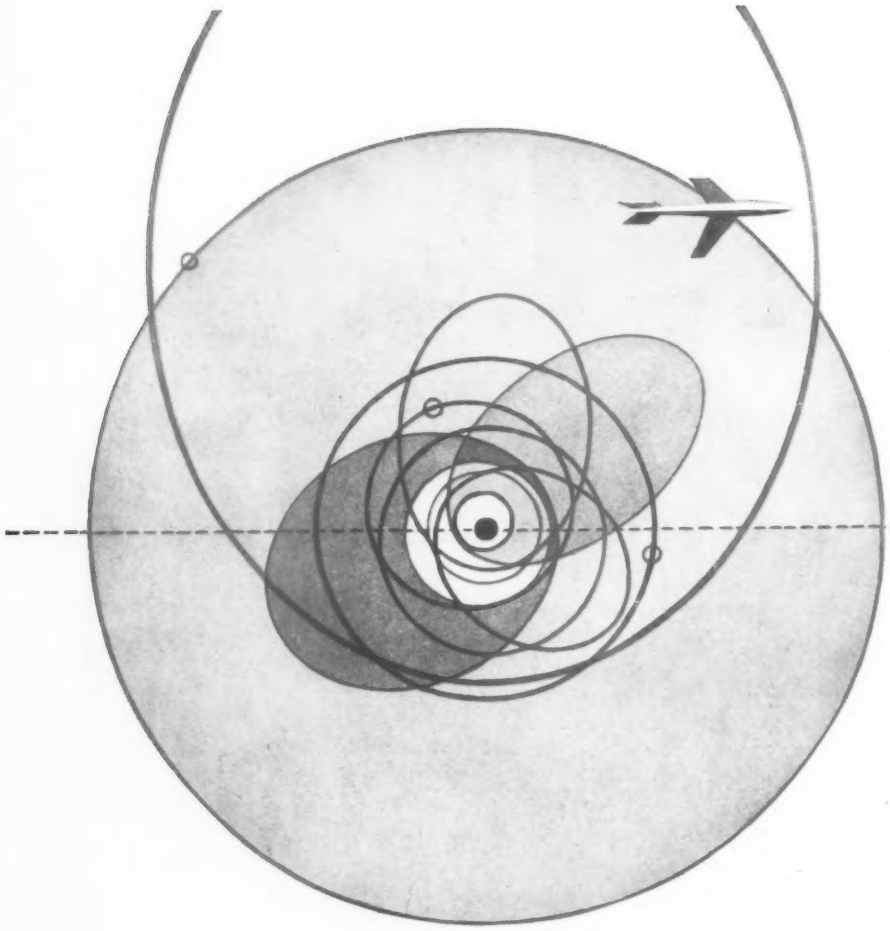

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Managing a Revolution

By Rear Admiral Albert Mumma
Chief of the Bureau of Ships, United States Navy

EVOLUTION equivalent to a revolution is taking place in the Navy. The engineers' dream of atomic power has become a reality in the NAUTILUS (SSN-571). Now, only one year after her trials, the Navy has in its current and proposed building programs an atomic fleet of fourteen other submarines, a cruiser, and designs and preliminary component work on an aircraft carrier. Far-ranging missiles are just as rapidly supplanting guns. Two submarines and five cruisers already have guided missile capabilities and current and proposed programs provide for the construction or conversion of a whole fleet of guided missile ships.

These two developments, as historic as the introduction of steam and the rifled gun, are being integrated with other developments which, taken collectively, are also revolutionary. For instance, the extraordinarily successful tear-drop shape of the ALBACORE (SS-569), designed for high speeds and great maneuverability underwater, will be used for the latest seven of the nuclear-powered submarines. The nuclear-powered aircraft carrier will utilize brand new, extremely powerful catapults and the advanced angled-deck principle.

The Bureau of Ships and the field activities under its management control play a key part in this revolution. We are the Navy's technical agent for shipwork. We design, test, procure and maintain ships' hulls, machinery, and equipment ranging from washing machines to radar. We are responsible for research and development associated with these primary tasks and in various collateral fields such as salvage and radiological, chemical and biological warfare defense. We also procure certain vessels for the Army and Air Force and act as procurement agent for ships to be transferred to friendly foreign nations. As Bureau Chief, I am responsible for coordinating shipbuilding for the Department of Defense and, in wartime or periods of declared national emergency, act as Coordinator of Conversions and Repair for that Department and represent it in coordinating work with other Government agencies. The Bureau is responsible for mobilization planning in these various connections.

It takes a big outfit to do this job. The Bureau, the headquarters in Washington, is manned by about 4000 people. Outside of Washington are eleven naval shipyards, several laboratories and other technical facilities and a variety of other activities spread all over the world. Altogether, our organization consists of over 100 separate activities employing over 125,000 civilians and 5,000 military personnel. We comprise one of the ten largest businesses in the nation.

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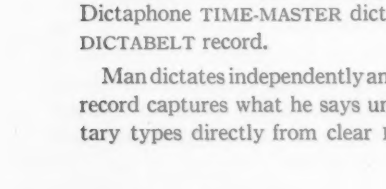

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well to manage an industrial organization. The majority of them are engineering duty specialists who have postgraduate degrees in engineering or naval architecture. They are given a series of carefully selected assignments carrying progressively more responsibility and having great variety. Throughout their careers their practical work is augmented by lectures, courses and seminars on various aspects of management. Some of our officers are given high level management training at postgraduate schools of such institutions as Harvard, the University of Pennsylvania, the University of California and others. Thus, to each new assignment they bring not only ever broadening experience but also increasingly various contacts and fresh points of view. By the time they are occupying positions of substantial responsibility, they have acquired an extensive knowledge, both practical and theoretical, of management techniques.

Actually, officers fill only a relatively few key management and staff positions. Civilians usually provide the highly specialized skills and man the intermediate levels. We spend a lot of time, effort and money assuring that these people receive appropriate training. This is a big job. There are, for instance, over 2000 separate occupations in a shipyard alone. Training in these occupations, which range from welder through engineer to managerial official, is the responsibility, first, of the immediate supervisor. When the requisite training is beyond his capacity, he calls upon the very extensive resources of the activity and occasionally upon facilities available outside the activity. These resources and facilities deal with a great variety of matters. For instance, recently many persons have been given special courses in the Controlled Maintenance Program, a management tool that will be discussed later. Others have been trained in industrial fund accounting methods. Many have participated in our four year apprentice program or our five year engineer development program. A few have been selected to attend postgraduate schools in management at various universities. A great many of our supervisors, some of whom are engineers more used to dealing with verifiable facts than unpredictable people, have participated in a program designed to help them deal effectively with human beings. An indication of the extent of our efforts is that 4000 different courses were given in one year at the shipyards alone; there were about 160,000 participants in these courses. A continuous program for training on such a scale is required because procedures and techniques are constantly changing, particularly in a revolutionary era. Through the program we assure that our people have the skills and knowledge to do their work and do it well.

These are the people who run the Bureau and its field activities. One of our concerns is to see that they work in logical organizational units. Fortunately, this is not a difficult matter insofar as the broad outlines are concerned. That part of management which must be centralized in Washington is the Bureau's task; productive work is either supervised or done by the field activities. Generally, it is not difficult to define clearly the responsibilities of the field activities, for the tasks for which they are established usually form logical and rather simple organizational units. Thus, we have a Shipbuilding Scheduling Activity, a Mine Defense Laboratory, a Boiler and Turbine Laboratory and a Radiological Defense Laboratory, among others. Their missions are well indicated by their names. We have Supervisors of Shipbuilding to represent the Bureau at private shipbuilding yards, Industrial Managers to represent us at ship repair yards, and a few Inspectors of Machinery to represent us at the plants of some machinery producers (generally, we are represented at manufacturers' plants by the Material Inspection Service of the Office of Naval Material).

The naval shipyards are our most complex field organizations, for their tasks are varied and difficult to compartmentalize, especially without detriment to efficiency or national security. They are large, usually the largest industrial organizations in their respective localities. Their tasks range from routine

supply functions to the construction, conversion, overhaul, or repair of a great variety of naval ships which are packed with complicated electronics and ordnance gear. Almost every yard has some specialty. The Portsmouth Naval Shipyard, for instance, specializes in submarine work. At each shipyard trades are organized into shops, such as the electrical shop, enabling the shipyard to have shops appropriate in size, number and type to its work. In charge of each of these shops is a Shop Master. They report to a Production Officer, who directs and coordinates their work. This breakdown is designed for job-shop work, which comprises the overwhelming portion of shipyard work. However, when a repetitive job comes along, we can and do set up an ad hoc assembly line.

Overall management of these activities and their work is one of the jobs of the Bureau in Washington. In addition, we have the people and machinery to decide what work should be done and where. This includes research and development planning, ship design, assigning work to field activities or contracting for its accomplishment by private firms, control of the development of components such as radar, and myriad other tasks. Here the organizational problem is most difficult, for the work requires special technical skills and close functional coordination, both to a great degree, and the two are not always compatible. Our current answer to the organization problem is a breakdown into eight divisions, four of which are devoted to the technical functions of the Bureau: research, development and design; shipbuilding and maintenance; electronics; and nuclear propulsion. One division handles the Bureau's responsibilities in connection with the field activities. The remainder are service divisions and handle such matters as finance, contracting and internal services, personnel matters and management. The head of each of these divisions is delegated great authority, leaving the Chief of the Bureau relatively free to handle matters transcending any one division.

One key division in the Bureau is the shipbuilding and maintenance division, which is broken down into four subdivisions. One subdivision is made up of ship-type branches (Submarine Branch, Carrier Branch, Auxiliaries Branch, etc.) which are responsible for the ship as a whole. Two subdivisions, the hull and the machinery subdivisions, are concerned with technical features common to many or all ships, such as hull arrangement, boilers, and turbines and gears. The remaining subdivision handles such functions as inventory control, logistics, cataloging. This breakdown appears to afford the Bureau the greatest opportunity for exploitation of specialized skills while providing the functional coordination so essential.

The actions of all the Bureau's divisions affect the field activities in one degree or another. However, the managerial aspects of the Bureau's relations with the field are usually handled by or channelled through the Field Activities Division. One of the more important aspects handled by this Division is the essential controls that must be maintained by the Bureau. A primary control is inherent in our assigning work and money. Another is a limited control over personnel matters, particularly over the numbers of persons at each activity. The Bureau also requires sufficient uniformity in organization, methods, procedures, personnel practices and the like to provide a general framework for effecting management improvements in all activities and to provide a similarity of the activities which deal with the fleet that will make it easier for the fleet and the bureaus and offices to deal with them. In addition, we require comparability of accounting methods. This enables us to present intelligible financial reports to higher authority. It also affords a good tool for comparing cost of performance. Financial control is further exerted by keeping close tabs on expenditures as a check on estimates for a particular task or subdivision thereof, thus affording good bases for re-estimates as necessary. Control of quality and quantity of work is afforded through reports and reviews from a variety of sources, varying from the reports of commanding officers of ships undergoing overhaul to reports required from the field.

All these controls are useful to the Bureau in making decisions regarding budget formulation, allocation of funds, redistribution of personnel, the recommending of military billet distribution and the directing of the shipment of certain materials.

We do our best to keep these controls down to the essential minimum. The people commanding our field activities are capable and they know best the local situation and the best way to accomplish their activity's mission. The more freedom they have, the better they will do their job. We do our best to extend this area of freedom. For example, we are providing each laboratory with a special research fund to be used where the laboratory believes the money will accomplish the most toward fulfilling its mission. Also, when we exert our authority, we try to stress the objective and let the activities determine the means for reaching it.

The relations between the Bureau and the field are definitely "two way." Field activities continuously make suggestions which improve the Bureau's methods of doing business. Frequently one activity develops a good management tool which the Bureau then disseminates to other activities. When we learn of a management technique from, for example, private industry, we study its applicability to our activities. When the idea is applicable, we tailor it as necessary and disseminate it to the field, from which we in turn learn much about how it can be improved.

This interplay between the Bureau and the field activities has resulted in the development of a large number of excellent management tools in recent years. For instance, we now have a Controlled Maintenance Program for public works departments at naval shipyards. This program stresses the concept of preventive maintenance

May Anniversaries

Ordnance Corps	14 May 1812
Command & General Staff College	7 May 1881
Women's Army Auxiliary Army Corps	1942
Military District of Washington	5 May 1942
Navy Bureau of Personnel	13 May 1942

and involves continuous inspection to identify deficiencies and to initiate immediate corrective action and planning and estimating by a centralized staff for all work except emergencies and service calls. It is also designed to eliminate excessive duplication or over-maintenance. It involves scheduling work so as to utilize labor fully, avoid material delays, determine work backlog, and provide a measure of performance. This program has been operating for some time at the Charleston Naval Shipyard. The overhead cost has been very small and already the program is paying large dividends. Savings are made in productive time and costs by the virtual elimination of breakdowns. Savings in the costs of major overhauls are being made through the adequate inspection and maintenance the program provides. We are now proceeding to install the program at all the naval shipyards.

Another management technique rather recently developed is what we call value engineering. For some time the Bureau has been concerned with the rising cost of naval ships. Recently, the Bureau became aware of the advantages of organizing a separate staff section to apply the test of value to design, manufacture, and purchasing techniques and to educate other sections in this technique. We have applied this principle to shipbuilding and maintenance under the name of value engineering. This is the study of a necessary function so that it can be accomplished at minimum cost and without impairing required performance and maintenance standards. It involves a critical review of existing satisfactory ways of doing things so that equally satisfactory but less costly alternatives can be developed and exploited. During one year key areas of the Bureau of Ships actively participated in the application of these principles and developed

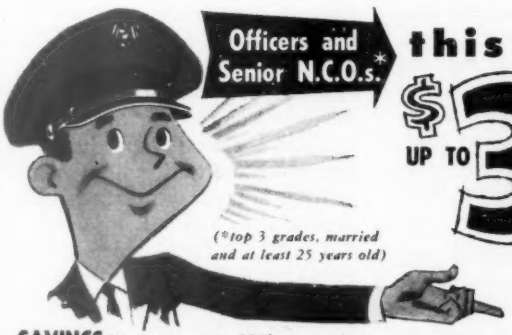
President's Armed Forces Day Message

Each year on the third Saturday in May, the Armed Forces of the United States, including the Reserve components and auxiliary services, make a special effort to increase public understanding of our national defense program which is, and has been from the beginning of our Republic, dedicated to achieving and maintaining peace.

In the present world situation, it is most important that our own people, and others throughout the world who believe as we do, should be cognizant of all aspects of our national strength—the spiritual and the moral, as well as the material and the military—and be reminded of our continuing efforts for peace.

The purpose of Armed Forces Day is to increase public understanding of, and to emphasize, our peaceful aspirations. I hope that all Americans, as well as many of our friends in other lands, will accept the invitation to visit our Armed Forces at this time.

Dwight D. Eisenhower
President of the United States



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ideas that will save about $18 million during a twelve month period. This beginning is indicative of the savings that can result from wide use of value engineering. We already have established value engineering units at the naval shipyards and considerable savings have been made in those activities. These units are manned by value engineers who deal with the specialists and as many other sources as possible to develop all the facts needed to make sound decisions on matters of engineering and cost. When the value engineer comes up with a recommendation, it is presented to the responsible specialists, but its feasibility must be proved to the satisfaction of those specialists before it is adopted.

Management is far more than special tools and techniques or organization and methods, of course. I believe that the key to good management is to instill in all hands a basic progressive attitude. We want thinking and planning in terms of the future, as well as the present. This is particularly important during a revolutionary period, when even in doing one's day to day work a man can get the erroneous impression that he is being forward looking, when the normal pressure of day to day work seems to leave little time for thinking and planning, when complacency is likely to set in, and when the rapidity of developments makes planning for the future all the more important.

Certainly the rapid movement of current events demands careful planning for the future. The extensive and rapid introduction of nuclear power and guided missiles aboard our naval ships is bound to have complex and widespread impacts upon those aspects of the Navy's business with which the Bureau of Ships is concerned. The sooner we can discern these impacts and take appropriate steps, the better. We have found that the only effective way to do this is to take the time to think and plan, to consider the problems at top level meetings and see that the people at those meetings consider such problems with their subordinates. The farther down we go in soliciting, thinking and planning, the more detailed and complete the results become. By the time the ideas filter back up, a sound approach has been evolved and can then be implemented. But this does not happen of its own accord; it requires pushing by top management to prevent its being lost in the immediacy of day to day pressures.

We want our people to have a progressive attitude toward their technical work as well. To obtain it, we have had to take steps to reduce conservatism. Too often in the past we have been dubious of taking chances. We have insisted on waiting until we have all the facts, carefully proven, before putting a new development into production. Too often we have concentrated almost exclusively on a short term program for achieving moderate progress because the program appears to be a sure thing. We have often failed to concentrate upon a more long-range program for radical improvements which is in the light of good engineering judgment a sound risk, because we want to commit ourselves only on a sure thing.

New ideas and radical approaches to problems are available, particularly in the minds of our younger personnel. They need to be given encouragement and solid backing before they will bring these ideas into the open and push them. They need to be told by their superiors that their ideas are welcome. Their superiors must be willing to take the necessary risks, to make a commitment. I do not believe that this approach is so daring as it might at first appear. A technical agency such as ours has a certain quota of "washouts" in its progressive programs. All too often these failures have occurred even when nothing significantly new or daring was attempted. The percentage of failures will not increase significantly as long as good engineering judgment is used. Certainly far greater progress will be made.

A high degree of receptiveness to new ideas is bound to engender some highly improbable suggestions. These might be considered a waste of time by some; however, I think that such ideas should be given serious consideration by a variety of people, not only because there might be some application for the idea that no one had thought of before, but also because mere exposure will further facilitate receptiveness to radical departures. For instance, the idea of a surface ship that steams along with its hull below the water and its superstructure jutting into the air is not new, but few have given it any serious consideration for naval application. We have given serious consideration to this apparent oddity and discover that it may well have an extremely valuable application.

We also urge that new ideas be given *positive* as well as serious consideration, despite immediately apparent and considerable objections. Recently, for example, the Bureau was urged that two conventional submarines already in the advance stages of construction be changed to guided missile submarines. Such a change is not to be taken lightly. It involves considerable additional expense and delay in completion, disruption of orderly building procedures, the sacrifice of certain military characteristics in favor of missile handling capabilities, and other factors. In the past such formidable objections might well have been considered adequate justification for a negative response to the idea. However, in line with our new approach, the "objections" were regarded as problems to be overcome, not insuperable obstacles, and careful and specific estimates of what was involved in the change were made. As a result, apparently insuperable obstacles were revealed to be in fact no more than problems which could be measured and weighed against the advantages of having missile capabilities aboard these submarines. The final decision was to make the change.

With all this attention to the new and dramatic, one might well ask what happens to the routine, day to day, plodding efforts? It seems to

me that there need be few, if any, such efforts. A problem dealing with, for example, the malfunctioning of one type of naval engine does not need to be routine. It will not be routine if it is recognized as an opportunity to develop new engineering knowledge. We are encouraging our engineers and contractors to go beyond merely solving such a problem. We are urging them to study it from all points of view, to surround it and extract every iota of new engineering knowledge, to use the knowledge obtained as a starting point for further progress.

The "routineness" of some projects is due to their apparent unimportance. We are taking a look at such projects to determine whether or not they really are important and contributing to progress. As soon as engineering judgment indicates that they are not, we drop them, even though a million dollars more might complete a five million dollar program. When a project is determined to be profitable, we note our error in having considered it unimportant and push it as hard as we can. "Routineness" and a progressive attitude are incompatable.

This progressive attitude cannot be "institutionalized" in a busy organization. It takes emphasis on the part of top management, constant willingness to give serious consideration to new ideas, and willingness to make a commitment, to take a risk based on sound engineering judgment. Now that a significant portion of our people are thinking in terms of the future, this progressive attitude is a great deal less difficult to maintain. Nevertheless, this precious asset must be guarded with vigilance, lest it succumb to routine aind immediate pressures.

Capable, well-trained people thinking and operating in terms of the future, in a sound organization with sound management procedures and techniques—this is our answer to the problem of managing a revolution. It will be noted that this method makes no direct mention of controlling a revolution, of preventing it from getting out of hand. There are two basic reasons for this lack of emphasis. One is that we are a military organization in the midst of a technological race for superiority. It is difficult to proceed too rapidly in this circumstance. The other is that sound engineering judgment, which we never permit to be sacrificed in the interest of our progressive attitude, prevents forays into profitless areas.

The most dramatic technical revolution in a century is upon us. It did not overwhelm us. The Bureau's organization and procedures were sound enough and flexible enough to absorb the first shock and to permit the necessary adjustments without disruption or delay. Nor are we simply riding the crest of the wave. Encouraged by the new progressive spirit of our management, our people are, more than ever before, pushing new installations, ferreting out new applications and implications, and imaginatively creating new ideas. They are enthusiastic and their enthusiasm is accelerating the revolution in naval ships, extending it, intensifying it.

This is the way we are managing this revolution. This is how we are creating today the ships of tomorrow.

New "Nancy Gear" Slated For Ships Of The Fleet

A new type of infra-red receiver is now in quantity production and is being installed on ships of the fleet.

Known to Navymen as "Nancy Gear" from a WWII code name, the infra-red signaling device sends out waves which are invisible to the human eye. The signals are picked up by a special infra-red receiver. The use of the gear allows the interchange of messages from ship to ship without the danger of detection by an enemy.

The new "Nancy Gear," officially designed AN/SAR-4, is broken down into two components. It replaces the old C-3 type, a one piece set.

The image tube, which converts the infra-red image into visible images. is contained in the central sealed body of the set.

Dr. Howard Authors Book On Research Management

Dr. George W. Howard of the Corps of Engineers' Research and Development Laboratories. Fort Belvoir, Virginia, is the author of a new book, "Common Sense in Research and Development Management," published by Vantage Press.

The book is based on a year's study of management in research and development institutions here and abroad, made possible through the grant of a Rockefeller Public Service Award to Dr. Howard in 1953. As a recipient of the award. made annually to career civilians for outstanding service to the Government, he visited 62 laboratories in the United States and Canada and 18 in Europe to gather material for his publication.

His book covers organization for effective control of research and development, selection of personnel, professional development of the worker, direction of research and development, planning and checking progress, management of laboratory finances, internal communications, and services in research and development establishments.

The Pentagon contains 3 times the office space of the Empire State Building.

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What Management Means to Me—

This Month:

By Colonel Irene O. Galloway
Director, Women's Army Corps

As a member of the military service, I know personally the benefits which accrue to the service individual as a result of service management in its total sense.

A simple definition of management appeals to me—getting the most from all resources. In national defense, our most important resource is the people who serve.

The mission of the Women's Army Corps is to make available to the Army the skills and services of volunteer women. As Director, Women's Army Corps, my concern is to see that each woman who serves in the Women's Army Corps makes her maximum contribution to the service and to the nation. It is imperative that she be encouraged and required to contribute her most to her participation in national defense.

The Women's Army Corps is an integrated part of the Regular Army, established as such by the Congress of the United States. The Congress of the United States in the establishment of the Women's Army Corps recognized that WAC personnel would be employed throughout the Army structure. The legislation establishing the Women's Army Corps further provided that the Director of the Women's Army Corps serve as advisor to the Secretary of the Army and to the Chief of Staff on all matters pertaining to women in the Army. Three aspects are of principal importance in the advisory and planning areas: the enlistment of young women mentally, physically and morally qualified to serve; their assignment and utilization for initial and progressively more important jobs; and careful and continuing attention to their morale and well being.

As an integrated component of the Army establishment, the Women's Army Corps benefits from established army management procedures. These procedures insure getting the right people in the right jobs, providing the proper training for job performance, and exercising effective supervision. The activities involved in the Army evaluation of effective performance again apply equally to the men and women who serve in the Army and include survey teams on all levels of command; field research groups; Comptroller management surveys; work measurement and job performance surveys; Inspector General, command, and training inspections; attitude surveys; and the findings and recommendations of the research and analysis agencies of the Army.

Army management incorporates the aspects of industrial management with an ever-increasing emphasis on the qualitative aspects of management—the personal in personnel.

The qualitative aspects of management are of particular significance to a volunteer corps like the Women's Army Corps. It is to those aspects of management that I shall direct my comments, in connection with the three principal areas mentioned: the enlistment of qualified young women, their training and utilization, the building and maintaining of their morale and well being.

Each major commander within the Army establishment has on his staff a WAC officer who serves the command in somewhat the same capacity in which the Director serves the Department of the Army. In effective management there can be no substitution for first-hand knowledge. There can be drawn no blueprint from the Office, Director, WAC, which can be tailored to fit the variety of installations and the range of assignments in which WAC personnel serve. By staff visits to the field as required, the Director WAC and the WAC Staff Advisors are able to apprise themselves of local conditions; to assist the commands in the most effective utilization of women personnel; and to analyze the aspects of living and working conditions which most directly affect morale. The background of first-hand knowledge is analyzed to establish the criteria for enlistment, to determine the jobs which women can best perform, to select installations where women can serve most effectively, and to evaluate the factors most significant for women's morale and well being. Again, no blueprint is established. To accomplish our mission—to make the skills and services of volunteer women available to the Army—we direct our attention to where we are and to where we are going to be of maximum value.

Management is not limited to the judicious controlling of our present personnel and policies. It further includes planning ahead for future utilization. To plan for the future we must have a firsthand knowledge of the present realities.

There are established career patterns for all of our personnel. In this age of specialization, the Army plans a flexible specialization. We must not only fit the right people into the right job; we must also plan career fields sufficiently pliable to permit immediate and effective expansion in case of emergency.

The training and the supervision of Women's Army Corps personnel, officer and non-commissioned officer,

is directed to enable the women who exercise either command or staff supervision fully to discharge their responsibilities to achieve the most effective utilization of personnel.

The pattern of the organization of our enlisted women into detachments under the command or management of a WAC officer is a strong link in the chain insuring the proper utilization of our personnel. The Detachment Commander works with her command to get the right people into the right jobs and correlates this aspect of management with the building and maintenance of morale. Prior to such an assignment, she is given training in unit management, personnel management, classification and assignment, and leadership. Great stress is placed on the human relations factor between a commander and her subordinates which is an important feature in the management of an Army unit. An efficient WAC detachment commander is one who has a thorough knowledge of her duties; whose human relations quotient is high; who is able to imbue the women under her command with a strong sense of responsibility to the Army; and who is able to help her subordinates recognize their specific value in their own jobs as fell as in their contribution to the over-all accomplishment of the Army mission. It seems particularly significant in the management of women to recognize that the good woman soldier is the one who is almost too busy and who achieves a realization of the significance of her performance. It is necessary that each individual know not only her own job, but also the significance of her job in the accomplishment of a clearly defined mission.

In the final analysis, management within the Women's Army Corps is broad and advisory at the top level; advisory and interpretive at the WAC Advisor level; and administrative at the unit level. At all levels, the focus is to get the most from personnel resources. The goal includes the most in full measure of service for the nation and the most in full measure of satisfaction for the individual in an important and vital job well done.

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Chrysler Experimental Gas Turbine Car Completes Cross-Country Endurance Run

Chrysler Corporation's experimental gas turbine-powered passenger car arrived at Los Angeles City Hall on March 30, successfully completing a 3,020-mile endurance run from New York City.

The turbine car—a four door 1956 Plymouth sedan, a standard production model in every respect except for the revolutionary Chrysler-developed power plant—departed from the Chrysler Building in New York City Monday, March 26.

The historic test was the first transcontinental journey of an automobile powered by a gas turbine engine.

At a news conference in Los Angeles, James C. Zeder, Chrysler Corporation vice president in charge of engineering commented:

"Historically, the transcontinental trip is the top test. The turbine car experienced fewer failures than newly-designed piston-type engines have when submitted to the same test."

George J. Huebner, Jr., the company's executive engineer in charge of research, was asked whether the turbine lived up to expectations. "It certainly did," he stated. "We were simply delighted with its performance."

Purpose of the run, according to Mr. Huebner, was to test the turbine's acceleration, control in traffic, action on steep grades and under various climatic conditions.

He told Los Angeles newsmen that the top outside air temperature experienced was 89 degrees in sections of Oklahoma, Texas and New Mexico. The lowest temperature was 18 degrees near Albuquerque, New Mexico. Highest altitude was 7,700 feet.

While traveling on the open road, according to Mr. Huebner, the car cruised at between 40 and 45 miles per hour. Over the entire trip, fuel mileage averaged between 13 and 14 miles per gallon. Mr. Huebner described the mileage as "phenomenal for this type of engine."

Utility's Daughter!

The Army has taken to the rails. It now has a vehicle equipped with flanged wheels as well as tires. It can roll either on highways or railroad tracks. It serves as a bus, ambulance, or cargo carrier.

The atomic energy industry is making plans for great developments . . . Private U.S. research institutions and companies will spend $300 million in the next four years on nuclear research for industrial uses . . . The program was announced by Atomic Energy Forum, Inc., a non-profit association of 250 business firms.

Conclusion

Organization of the Universe

by Weldon T. Ellis, Jr.

The question immediately arises as to why the centrifugal force generated by the rotation of the earth – increasing the mass and thus the inertia of objects upon it– does not cause them to fly off into space by continuing in a straight line? Or, why does an object not remain suspended in the field once it is separated from earth by enough distance to permit the ylem to flow around it? This is where the countervailing vibrations play a part.

To answer these questions we must consider the vibrating energy releases from the atoms as playing two major roles. First, the releases from all planets would maintain the intra-galactic pressure of the universal field. This pressure would both help maintain the expansion within the galaxy by pushing the planets away from each other and also help keep the planets and atoms from expanding and disintegrating too rapidly by pushing in upon them from all sides. In the second place the releases from the atoms of the earth would help counteract the pressure upon the earth of the universal electromagnetic field and thus permit the earth to expand and develop along with the rest of the galaxy.

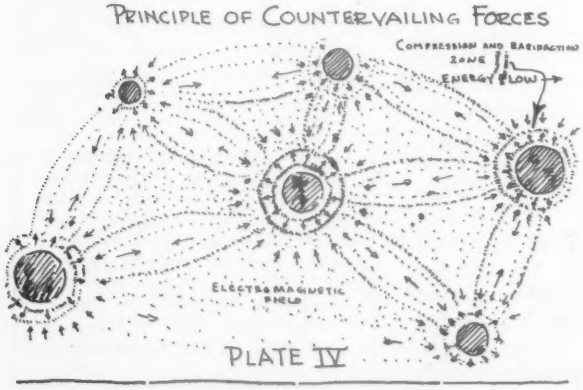
The counteracting of pressure would be accomplished by the neutralizing or cancelling out of one set of waves by another of the proper frequency, amplitude, and phasing. This process would be similar to the cancelling out of two opposing sets of waves of sound, light or water. The two sets of waves can also amplify or intensify each other when properly phased. When they reinforce each other they create a compression band or intensification in the vibrational field as contrasted to the band of relative quiet or rarefication when they cancel each other.

The amplification effect is demonstrated by a base-reflex, loud speaker housing or by the Heaviside layer in the atmosphere around the earth. At times the interplay of the opposing fields, one from the earth and the other the universal field, plus the presence of the correct types and quantity of gases, is dramatically demonstrated in a magnificant heavenly photo-electric effect–the Aurora Borealis. The gas molecules dance and glow in the vibrating fields like the molecules of gas when they are excited by the vibrations of the electric field within a neon light.

In this hypothesis the assumption is made that the cancelling or neutralizing effect would be greatest nearest the earth. This would mean that the universal field would be less intense the nearer you approach the earth. Further from the earth's surface there would be a shell of increasingly intense vibrations as the two fields start complimenting each other. There would finally be a band of maximum intensity with lesser side bands or harmonics. Beyond these bands there would be a gradual resumption of the normal vibrational pattern of the universal field. The two opposing sets of waves would not actually cancel each other but would pass through each other. The localized effect would, however, be that of attenuation or intensification depending upon the mutual phasing.

The combination of the lesser intensity nearer the earth and the increasing intensity away from it would create the effect of a push toward the earth. This push toward the earth would be the normal feeling of the *pull* of gravity.

The above can be stated in more general terms. Two bodies either repulse or attract each other

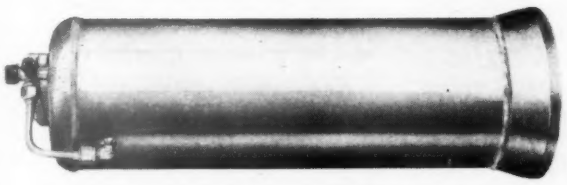


NIKE: PROOF POSITIVE

Nike, a tactical air-defense weapon that is rapidly being installed by the U.S. Army in and around our most strategic defense areas, has demonstrated the reliability and producibility of rocket power.

Under subcontract to the Douglas Aircraft Company, which is associated with the Western Electric Company, prime contractor on NIKE, Aerojet-General developed the sustainer rocket motor for NIKE and is producing them for Douglas in large quantities.

The largest industrial organization devoted exclusively to the development and production of rocket powerplants, Aerojet-General is supplying new, bigger and better rocket power for the Nation's defense program.



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depending upon their distance apart—the extent of attraction or repulsion being dependent upon their mass.

The force of repulsion is a component of the expanding universe and the energy releases from the bodies themselves. When the two bodies are close enough to each other for their vibrations to overlap and be in phase they would neutralize the electromagnetic field between them. This dampening of the vibrations between the two bodies would create the effect of a relative increase in the intensity of the field surrounding them. The two bodies would then be vibrated or pushed into the area of less intensity of vibration between them. The net effect would be that of the two bodies having an attraction for each other, but in fact they would be pushed together by the greater external pressure of the universal field.

The degree and extent of dampening of the universal field would depend upon the relationship of the frequency and amplitude of the vibrations of the two bodies to each other and to the universal field. This effect would be demonstrated by the neutralizing or magnetic properties of iron. The ability of iron to neutralize the electromagnetic universal field would account for the strength of its magnetic properties as compared to other metals. Perhaps the vibrational pattern of iron is most nearly resonant to the universal field in this part of our universe. According to Varian the frequency of resonance is a linear function of the magnetic field. At any rate the alternating bands of intensified and attenuated vibrations can be clearly shown by the iron filings demonstration. According to the author's hypothesis, the vibrations of the magnet cause the atoms of the filings to vibrate in resonance. The natural tendency to move from an area of greater disturbance to one of relative quiet is shown by the way in which the filings arrange themselves.

To carry further the concept of magnetism as a component of interacting fields there would be no flow, as such, through a magnet, as postulated by the classical concept of magnetism. In this hypothesis, the natural resonance of the iron would be intensified by their vibrating in unison. This vibrating in unison would produce a well-defined series of waves radiating from the magnet.

The ability of either end of a magnet to "pick up" a piece of iron would be easily understood. There would be an oscillation effect or periodicity that would cause a difference of pulsing at the poles. The positive pole would emit a wave at x moment. The other pole at x plus 1 moment. Either pole would emit waves that would react with the surrounding field. The pattern would be intensified along the axis of the magnet. The neutralized zone between the magnet and piece of iron would create a low pressure area and the iron would be pushed to the magnet just as an object is pushed to earth by the greater external pressure of gravity.

The difference in phasing or time of oscillation of one pole as against another would determine their polarity. Since this is a matter of timing and not of frequency or amplitude or direction of flow, both ends would "pick up" a piece of iron.

The phasing of the vibrations from the two poles would determine whether they reinforced or neutralized each other. Like poles would reinforce or create a higher compression (pressure) zone and thus would repel each other. Unlike poles would create a neutral or lower pressure area between themselves and thus be pushed together.

The phasing would remain constant regardless of which way the magnets were turned or how fast the two poles were brought together. The phasing or pulsing of the magnets would be in relation to that of the universal electromagnetic field. Since both magnets are reacting in response to the same field, their pulsing would remain constant in relation to each other. Other metals with lesser magnetic properties would bear a harmonic relationship to iron.

In addition to gravity and magnetism other phenomena can be explained as components of interacting fields.

The so-called electron shells would be easily explained as miniature ionospheres. They would be alternating spheres of compression and rarefaction created by the interaction between the waves of vibrations from the nucleus and the surrounding field.

It is much easier to picture the paths of planets as resultants of varying pressures from other planetary radiations than it is as resultants of varying attractions, though the result be the same.

The erratic movements of molecules in a gas become clear when viewed as caused by the interplay of interacting vibrational fields. Similarly, the torturous path of lightning made by nature or man would be seen as simply the taking of a course of least resistance through the fantastic web of interacting vibrations that surrounds us.

In one sense it all boils down to a series of nodal points in an extremely complex universal field. To the mathematician this hypothesis should have a special appeal. The universe is depicted as the product of a series of vibrational patterns. Vibrational patterns can be reduced to curves and any curve

FIELD FORCING TWO BODIES TOGETHER

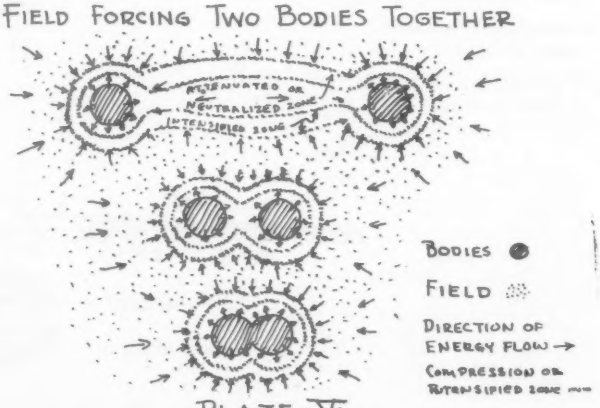

PLATE V

can be expressed as a mathematical equation. Perhaps the dreams of Decartes and others can be realized.

From the above, it may be said that natural phenomenon can be explained in the context or parameters of this hypothesis. In a like manner the relationships between gravity and magnetism may be explained in terms of behavior patterns that are common in origin. Since both gravity and magnetism are explainable as components of like nature interacting with a universal field of which they become a part, it does not appear presumptuous to state that the hypothesis and the Unified Field Theory are not in conflict.

The greatest test of the validity of a hypothesis is its ability to produce or at least point the way to producing practical results. In this age of interest in space and space flight much thought and effort have been expended upon methods of achieving escape velocity by overcoming the *pull* of gravity. Perhaps the concept of the pull of gravity has caused us to look in the wrong direction. Past and present approaches have been through the use of rockets. The explosion of the propellants creates a literal pillar of vibrant energy that rams the rocket through the universal field by sheer brute force. Perhaps the author's hypothesis can point to an approach that will find a door by neutralizing the electromagnetic field that surrounds us. Perhaps this door can be used to open a passage to the stars. Perhaps the so-called heat barrier would disappear just as did the so-called sound barrier. Perhaps, also, a way would be found to overcome the problem of the different rates of passage of time as envisioned in a universe bound by relativity and thus open new fields for man to explore.

Bendix Aviation Expanding with Palmdale Plants

Bendix Aviation Corporation has started construction of two new facilities at this fast-growing aviation center 50 miles northeast of Los Angeles for the testing and servicing of equipment for military air bases and manufacturers of jet aircraft.

The new Bendix buildings will be the first permanent installations of their type designed specifically to serve the booming aeronautical industry and network of military air fields in the Mojave desert and adjacent Antelope Valley.

The installations are being constructed by the Utica division and the Bendix Products division of Bendix. The Products division building, covering 5,600 square feet, will house shop and test facilities for Bendix fuel metering and landing gear equipment. The Utica division is building facilities totaling 2,000 square feet for servicing and testing of combustion starters and air turbine accessories. Bendix acquired 9½ acres south of Palmdale, adjacent to the Southern Pacific railway, for the new units.

First Aero Commander Delivered

The first Supercharged Aero COMMANDER Model 680 was delivered recently to the Long Manufacturing Company, Inc., Tarboro, North Carolina. The delivery was made at the Aero Design & Engineering Company's Bethany, Oklahoma plant. This new airplane, the fastest plane being produced expressly for business today, has a top speed of 260 mph. It can lift 7,000 lbs. gross load to over 25,000 feet. With only one of its two engines operating, it can maintain an altitude of 15,000 ft., while carrying 5 to 7 passengers.

This new airplane was delivered to C. R. Grey, chief pilot for the Long Manufacturing Company, who flew it away. Mr. Grey was accompanieid by Gene Hudman, Division Manager of Stonnell and Holladay Aircraft Sales, Charlotte, North Carolina, Aero Commander Distributor who made the sale.

Prop-Jet Cargo Transports To Undergo Weather Tests

MARIETTA, Ga.—Extreme cold weather tests are slated soon for the first of the U. S. Air Force's new prop-jet cargo transports—the Lockheed C-130 Hercules—at Eglin Air Force Base, Fla.

One of the new, radically-designed transports has been delivered to the Air Force cold weather testing base, a Lockheed Aircraft official at Marietta disclosed today.

The first Hercules prop-jet physically delivered to the Air Force joins many other aircraft at Eglin AFB, where several times each year the Air Force subjects its new airplanes to sub-zero temperatures.

The 54-ton, four-engine C-130 is to be placed in a gigantic hangar specially designed for cold weather test operations and will remain there over a period of several months.

Purpose of the tests is to determine the effects of extreme cold weather on the functional and operational components and systems of the Hercules. This involves running up the 3,750-hp. prop-jet engines, as well as operating such systems as the airplane's landing gear, rudder, ailerons, cargo doors and electrical and hydraulic components.

• THE AIR FORCE HAS INTENSIFIED STUDIES looking to a reduction in the headquarters overhead throughout its major commands. Lt. Gen. Charles T. Myers, USAF, Air Training Command Chief, is credited with more than a 40 per cent cut at Scott AFB, Ill.

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ARMED FORCES MANAGEMENT ASSOCIATION

NEWS and ACTIVITIES

The Annual Conference of the ARMED FORCES MANAGEMENT ASSOCIATION, will be held again this year in Washington, D.C. on 25 May 1956. We know you will want to support the Association by being present if at all possible, and urge you to arrive on the 24th, as the annual business meeting will be held that evening. Again this year, we have selected for your program many interesting and well-known speakers from both industry and the military services. Your participation together with your chapter will result in another successful meeting of the Armed Forces Management Association.

CHAPTER 13, Fort Benning, Georgia. The fourth meeting of the Executive Council, Chapter 13, Armed Forces Management Association, was held on Monday, 5 March 1956, at 1500 hours. Mr. Dana Sperr, as the 10 minute special speaker, discussed the "Span of Control" and its application to Army Management. After adjournment for dinner, the near 50 members enjoyed an interesting talk by General F. R. Zierath, USA, on "The Practical Aspects of Military Management." The April meeting, held on 2 April, had Mr. J. A. Willman, City Manager of Columbus, Georgia, for a guest speaker on the subject of "Municipal Management."

The Infantry Center— A Challenge to Management

Brigadier General Robert L. Cook
Assistant Commandant, The Infantry Center

This month we are pleased to bring you comments by Brigadier General Robert L. Cook, Assistant Commandant of The Infantry Center—"The Infantry Center—A Challenge To Management."

SOME people believe and we prefer to think of The Infantry School as one of the world's greatest institutions for military education and for the development of military leaders.

The present mission of The Infantry School is to train Infantry officers and enlisted men to command in war, to qualify them in Airborne and Ranger, to revise and develop doctrine and techniques, to prepare literature to assist with the Reserve Officer training, to support National Guard training, to support United States Army Reserve school training programs and to administer most of the Infantry Series, Army Extension Courses, and such other Army training activities directed by Chief of Continental Army Command.

Management of any large enterprise is a challenge to the initiative, ingenuity and force of the person in charge. As we consider The Infantry School, its mission and its many operational functions, we realize what a large managerial job it is and just how great is its command responsibility for we cannot ignore the fact that command requires management of a very high order if it is to be effective.

Probably never before has the emphasis been put on management ideas to the extent that it is now.

What is this challenge to management when we speak of the operation of The Infantry School? Physically it has about 183,000 acres of land, 72 classrooms, 56 firing ranges $87,000,000 worth of developed resources, a student body of approximately 18,000 students yearly, and a staff and faculty of approximately 640 officers and 1,600 enlisted men. In an emergency, we can expand quickly to 50,000 students yearly. Last year, we trained 800 Allied students from 35 countries. There are few larger Universities in the world. During wartime, its necessary expansion makes it the largest institution of its kind in the world. During 1951, as the Korean situation worsened, it expanded to 48,000 students in 247 classes.

Such expansion taxes management to the limit. At all times, those in the top positions (the Commandant and the Assistant Commandant) must be ready. This means forward planning of a high order and use of the best ideas available. We realize the importance of planning and urge the use of good ideas on the part of our staff, advisors, and departments.

In this connection, management realizes the importance of research and development. The exploration and use of the latest findings of our research agencies is the main objective of the School's Combat Developments Office.

Not only do we teach, but we develop new subject matter and new doctrine to be taught. In the past one or two years, efforts of the Combat Developments Office have centered around such projects as: anti-tank weapons, light weight tracked vehicles, mine warfare doctrine, battlefield illumination and the use of infra-red, use of helicopters, flame throwers, mortars, light stream crossing equipment, loads and load carrying equipment,

reduction of types of ammunition, and many others. Such projects are a part of the subject matter of our courses and their results are a measure of our progress.

As part of management, the School is following the Army emphasis on increased economy. In our continuous study of staffing requirements, the Management Officer in the Secretary's Office is asking, "What is the School's workload?", "How many people do we need?", "What weight do we give to the commanders' evaluation of their needs?", "How valid is our performance data?".

Student load is the measurement unit but this is only a part of the School's total workload because of the tremendous amount of time spent on research, analysis, doctrine development, testing and writing.

The School accounts for productive hours in five categories: instructor hours, preparation, development of material, extra details and administration. Our requirements must match availabilities. Our 799 spaces is 198 below what we consider realistic requirements. We plan to use more enlisted men where feasible. Surely it is a challenge to us to act when young men who have master's degrees in psychology, engineering, electronics, and education arrive at The Infantry School as privates. It is a definite part of management's policy to exploit these abilities to the fullest. There is an excessive turnover in non-commissioned officers and we have not been able to secure replacements for authorized vacancies. Thirty-one month stabilized tours filled by volunteers would help our situation.

Management recognizes that by identifying workloads based on past performance and future needs, and by wisely using personnel spaces available, we can improve the quality of the School's performance. Our goal is to do the assigned tasks and maintain high standards.

Stryker*, in Fortune, June 1955, gives some very helpful hints on management which I feel are applicable to the School:

"There is a difference between a manager with broad experience and a man whose broad experience has developed his judgement.

"It may be disastrous to put a staff man in a line job and vice versa.

"It takes more than specialization.

"Personality to supervise people is very important.

"Good administrator knows how to schedule and direct operations with little friction.

"Biggest jump is from good individual effort to the supervision of people.

"Don't rely on the old oil, Human Relations.

"Be gracious without being ingratiating and pleasant without being pleasing.

"If you blame the breaks, you haven't got what it takes.

"Do the job. Don't let it do you."

Training of our staff and faculty is considered a vital function of The Infantry School. Members of the staff of The Infantry School are trained by the several departments on the job. They are not permitted to take over responsibility of key positions without effective training. An instructor is not permitted to instruct until he takes the Instructor Training Course and until he passes the practical test of being able to instruct successfully.

At the Infantry School, instruction is supervised or evaluated by the committee chairman, the group chief, by department directors, by the Director of Instruction and by the Assistant Commandant. In addition, there is inspection of one department's instruction by another department. Another source of information for the evaluation of instruction is the students' comments which are compiled and brought to the attention of the appropriate departments so corrective measures may be taken. This thorough supervision results in high quality instruction. The main objectives of the supervision is to see that effective learning takes place and that the Assistant Commandant's policies are carried out. Before an instructor is permitted to teach, he must rehearse his material thoroughly after making his problem realistic, effective, and worthwhile.

Some problems we are always faced with which are a stimulation to management are:

Delegation of decision-making power.

Selection of competent instructors.

High attrition rates because students do not meet prerequisites.

Coordination between departments.

Development of sound policy.

Use of research data.

Understudies for key positions.

Effective training of staff and faculty.

Continuity—How to keep from repeating mistakes. How to make for continuous progress. The retirement of files after two years means loss of continuity—even loss of the fact that anything has been done at all.

Even with things as they are, without these revolutionary developments of atomic power, unprecedented speed, new synthetics and automation, many leaders are frankly worried about the supply of broadly educated executives for top management positions. Too many of them have the "trained incapacity" of the narrow expert.

What is needed are policy level executives who are constantly forced to solve new problems and find fresh stimulating answers to old ones.

How can we introduce career officers to a new world of new ideas, new values, new interests, and to a new type of personality?

Should we stimulate discontent and a loss of complacency?

Whatever we plan for, however we try to carry out our assigned mission, we here at The Infantry School must never let up for an instant in facing the problems of a constantly changing world presenting us with unseen surprises.

There is no time for stagnation, no time for looking backward.

We must push for trained leadership in an age which calls for exploitation of all of our resources as never before. The wise use of such resources call for progressive management of a high order.

There were 1,149,000 civilian employes on the Defense Department's payroll in 1954.

*Perrin Stryker, "Which Route is Up" Fortune, June 1955, Page 99.

BLOCKS TO CREATIVE ACTIVITY were discussed by Dr. Rose L. Mooney of Ohio State University during the opening sessions of the creative engineering program now in progress at the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia. Staffed with more than 1600 engineers, specialists and other personnel, both military and civilian, the Laboratories are engaged in the development of engineer equipment for the Armed Forces.

Creative Engineering Program

by Walter F. Bayen

Civilian Training Officer, TEC
Fort Belvoir, Virginia

With the pressure of today's society, people are working in government, industry and other occupational areas at such a high productive pace that they do not allow time for thought. Many of us have become so conditioned to working along prescribed lines that we find it difficult to throw off the shackles which restrict our thinking. At the Engineer Research and Development Laboratories this problem has been approached. We wanted the project engineer to release his mind from some of the inhibitors with which it has been confronted.

Professor John E. Arnold of the Creative Engineering Laboratory at Massachusetts Institute of Technology agreed to assist the Laboratories in planning a creative engineering program at Fort Belvoir.

Top management was faced with the task of participant selection. The final roster consisted of 150 men including not only project engineers, but department heads, branch chiefs, and section chiefs. An avalanche of requests flooded my office for more spaces, but our plans provided for ten seminar groups of fifteen men each, beginning their meetings in the first week of January 1956. These groups will have a series of nine bi-weekly meetings extending into the first week of May 1956. Another series of requests came from other corps, services and industry; these were for the purpose of observation which were readily granted.

The program was arranged and the opening sessions took place on the 7th, 8th and 9th of December 1955. This three-day session began with an evaluation of individual creativity (conducted by Mr. Edmund J. Grant, Chief Test Section, The Engineer School), and lectures by Professor Arnold and professional associates which included Dr. Elliott R. Danzig, Executive Director of the Institute for Research in Human Relations, Philadelphia, Pa.; Mr. Wm. J. J. Gordon of Arthur D. Little Company, Cambridge, Massachusetts, and Dr. Ross L. Mooney of Ohio State University. Others on the program were Col. H. F. Sykes, Jr., Mr. James W. McGarrity and Mr. Flory J. Tamanini, all of whom are on the staff of the Laboratories.

Thinking has been stimulated at the Laboratories. The participants and observers are eager to read and study the printed copies of the lectures and related material of which hundreds of sets have already been distributed. We are fostering the atmosphere for thought which we hope will generate new ideas.

IN THE PALM OF HIS HAND

. . . a complete military transmitting and receiving station weighing about one pound!

The "battle maneuvers" illustrated above disclose a new dimension in military communication, made possible by modern transistor developments.

In his hand the officer holds an RCA Transceiver, a complete radio transmitting and receiving unit—the smallest 2-way FM radio ever built. The entire walkie-talkie is only 6″ x 3″ x 1⅛″ in size, with weight, including battery and all accessories, of about 20 ounces.

The men in the field listen to "battle instructions" over tiny receiver units built inside their helmets.

With a range of about a quarter mile, the RCA Transceiver can be pre-set for any frequency between 45 and 52 mcs. Only two controls are used and no tuning or adjustment is necessary during normal use. The receiver is an all-transistorized superheterodyne and the transmitter comprises two transistors and one tube, both contained in a single unit.

The feather-lightness and miniature size of the transceiver and receiver make it possible, for the first time, to extend communication to the individual level. It is another instance of RCA's constant search for new and better ways of doing things electronically. Demonstration and consultation with RCA field engineers throughout the world are invited. Call or write.

RCA Ultra-Miniature FM Transceiver compared with AN/PRC-10 (Walkie-Talkie)

TYPICAL MILITARY APPLICATIONS

- Tactical communications between squad and platoon leaders and higher, also with individual soldier or marine
- Military police and sentry duty
- Air and sea rescue (unit in survival kits)
- Guided missile installations (before and after take-off)
- Communications between maintenance crews, fire crews and between crew and control tower

Medical work (litter bearers to field hospitals) . . . *and hundreds of others.*

DEFENSE ELECTRONIC PRODUCTS

RADIO CORPORATION of AMERICA

CAMDEN, N. J.

For more facts request No. 25 on reply card

The role of swift percentage. computation in efficient management is discussed by author Wilk (right) and Accounting Section Chief, J. R. Simms.

Management by Percentage Controls PX Activity

By I. Wilk, Executive

San Francisco Regional Office
Army & Air Force Exchange Service

IT IS A RARE soldier or airman in this country who does not benefit directly from daily contact with one or more activities supervised or financed by Army & Air Force Exchange Service.

The reason for this is two-fold: First, Army & Air Force Exchange Service supervises operations of the vast post exchange network which provides non-issue goods and services at low prices. Second, and less generally known, profits accumulated in the process are returned to the soldier and airman through a welfare program as far-reaching as the PX itself.

Within this undertaking, from its first moment of historical existence, were planted the seeds of a management headache of major proportions.

As of July 25, this year, soldiers and airmen collectively, as inheritors of the duties, rights, and privileges of their predecessors, could look retrospectively upon 60 years of development and expansion—under official sanction—of the post exchange movement, back to a period just prior to the Spanish-American War.

On the date just mentioned, in the year 1895, Secretary of War Daniel S. Lámont published a directive which included the following statement:

"The post exchange will combine the feature of reading and recreation rooms, a cooperative store, and a restaurant. Its primary purpose is to supply the troops, at reasonable prices, with the articles of ordinary use, wear, and consumption not supplied by the Government, and to afford them means of rational recreation and amusement."

Let's compare this with the present mission of the Exchange Service as expressed by the Technical Information Branch, Headquarters Army & Air Force Exchange Service:

"Exchanges are established to supply persons to whom sales are authorized with articles and services of necessity and convenience at uniformly low prices and to generate funds to afford military personnel additional facilities for comfort, recreation, and amusement, and to contribute to activities which will foster and increase the physical and spiritual welfare of military personnel."

The obvious parallel should indicate clearly why the Exchange Service does not blush to claim direct descent from the directive of 1895, even though its present organization as a supervisory structure at the apex of the post exchange system, dates from a period as recent as 1948.

Less obvious is a rather important dissimilarity. Where the early PX was enjoined to "afford . . . means of rational recreation and amusement" in conjunction with its retail service, today's PX must "generate funds to afford . . ." substantially the same thing.

It is in generating funds that the modern PX differs most widely from its forebear of 1895, because in developing the present system of pooling profits for central welfare disbursement, as well as in assuming the supervision of domestic post exchanges, the Exchange Service has taken on the same problems as those of any other commercial enterprise with numerous branches.

It is through an examination of missions that we place the Exchange Service in its historical context. Now let's appeal to the same source for an explanation of our built-in management headache.

The existence of the Exchange Service, we find, is justified on this basis: We provide "sales . . . at uniformly low prices," and no less important, we "generate funds . . . for comfort, recreation, and amusement . . . to . . . foster and increase the physical and spiritual welfare of military personnel." One of the most important, yet least evident considerations implied here, is that the two aims are basically in conflict.

Providing low prices in the PX is *not* the sole consideration of the Exchange Service. The vast welfare program which provides "comfort, recreation, and amusement" is of major importance in maintaining troop morale. Some of the activities included in this program are unit funds, day rooms, libraries, service clubs, athletic equipment, photo-

graphic and other hobby equipment, soldier shows, and enlargement and modernization of existing facilities.

Prices and profits, then, must be delicately balanced to return the maximum benefit to the soldier and airman. The goals vary somewhat with the individual post and base, but average out at about 8% of sales.

Faced with a task like this one, management ordinarily would be permitted some latitude in applying markup percentages adequate to yield the desired net profit and still provide enough leeway to allow for anticipated, as well as unforseen, rises in operating costs and other necessary expenses. Few executives are as constrained as we are by tradition and regulation to apply the absolute minimum of markup, and to make any further adjustments that become necessary by increasing only efficiency, thus containing operating costs.

Containment, it should be emphasized, does not represent for us an absolute in achievement, but only a minimum standard for present profit requirements. Operating cost reductions beyond this point are returned to the PX consumer in the form of lower prices, and to do this is not the least of our goals.

In controlling our profits, then, we have developed an extra-ordinary sensitivity to percentages, and we compute, compare, and analyze them with fully as much attention as stock brokers poring over market reports.

Perhaps this dependence upon percentages can be more fully appreciated in view of the fact that all the funds with which the Exchange Service defrays such operating expenses as civilian salaries, equipment, fixtures, gas and electricity bills, as well as the funds which it pours into the welfare program, are non-appropriated. Thus it is sales to the soldier and airman which support the Exchange Service and its welfare program, and not the civilian taxpayer.

Now for a glance at our means of control. The most basic of these is the percentage-oriented Monthly Operating Statement which is prepared at the regional level from data supplied by local exchanges. This statement is the real key to the success of the close supervision that is our constant concern. It is a detailed percentage analysis of sales and expenses, based upon 100 percent of sales, and it contains a minute comparison of present performance figures with those of various other periods, as well as with budgets, in order to ensure maximum efficiency.

The Monthly Operating Statement prepared by the San Francisco Regional Office for submission to Headquarters, Army & Air Force Exchange Service, contains the results of more than 10,000 percentage computations. Because some of these are carried over from the previous month's report, and from the same month of the previous year, a remainder of more than 7,500 percentage computations are made each month by this office under the direction of J. R. Simms, Chief, Accounting Section. The computing itself is accomplished by five girls, all of whom are charged with other duties of an essentially full-time nature.

This periodic need for a high volume of figure-work, at the same time when routine tasks demand prompt attention, has created several management crises. These were finally eliminated by the purchase of equipment to enable the existing staff to carry out the assigned task. Division on fully automatic desktop calculators gave us the necessary expedition and at the same time, the required flexibility.

We make a point of flexibility because the strict operating economy that we are forced to observe would not permit the acquisition of machinery incapable of varied application. Therefore, the same calculators which now make possible the monthly compilation of percentage figures for operating statements—with no additions to the staff—also serve throughout the month on routine calculations. The most important of these is the extension of our Transfer Voucher.

This last is the basic document of inventory control, the key to supervising a complex movement of vast quantities of merchandise. Transfer Vouchers are originated by the sending and receiving agencies, and are reviewed by the Regional Office. The requirement for computation in this case is for efficient accumulative multiplication. Regional Office review involves approximately 8,000 vouchers each month with an average of about ten extensions for each. This is a rather good example of the versatility that is required of our equipment to achieve a level of operating efficiency that permits us to perform our mission better than satisfactorily.

It has been our experience—and this is the point we wish to emphasize—that few operations, civilian, military, or (like our own) a combination of the two, when once adequate means for extracting percentages are made available, will experience difficulty in employing this most useful of mathematical tools profitably. The more easily such comparisons are obtainable, the more use will be made of them, and the more profitable that use will become.

North American Perfecting Sabre Air Refueling

A "Buddy System" of flight refueling which would enable an Air Force supersonic F-100 to take fuel from another Super Sabre is under development for North American Aviation by Flight Refueling, Inc., of Baltimore, Md., it was announced.

Installation of the Probe and Drogue refueling unit in the Air Force's first operational fighter capable of exceeding the speed of sound in level flight will greatly extend its range or make it possible to increase its bomb load.

Under this system of aerial refueling an F-100 would take fuel from a "buddy" fighter trailing a hose and drogue from an external pod carried under the wing. The equipment being developed by Flight Refueling, Inc., will be a small, light-weight, highly compact hose reel housed in a streamlined external pod similar in contour to other fuel tanks.

Upon completion of refueling, the entire equipment is automatically stored within the streamlined pod so that aircraft performance is not penalized.

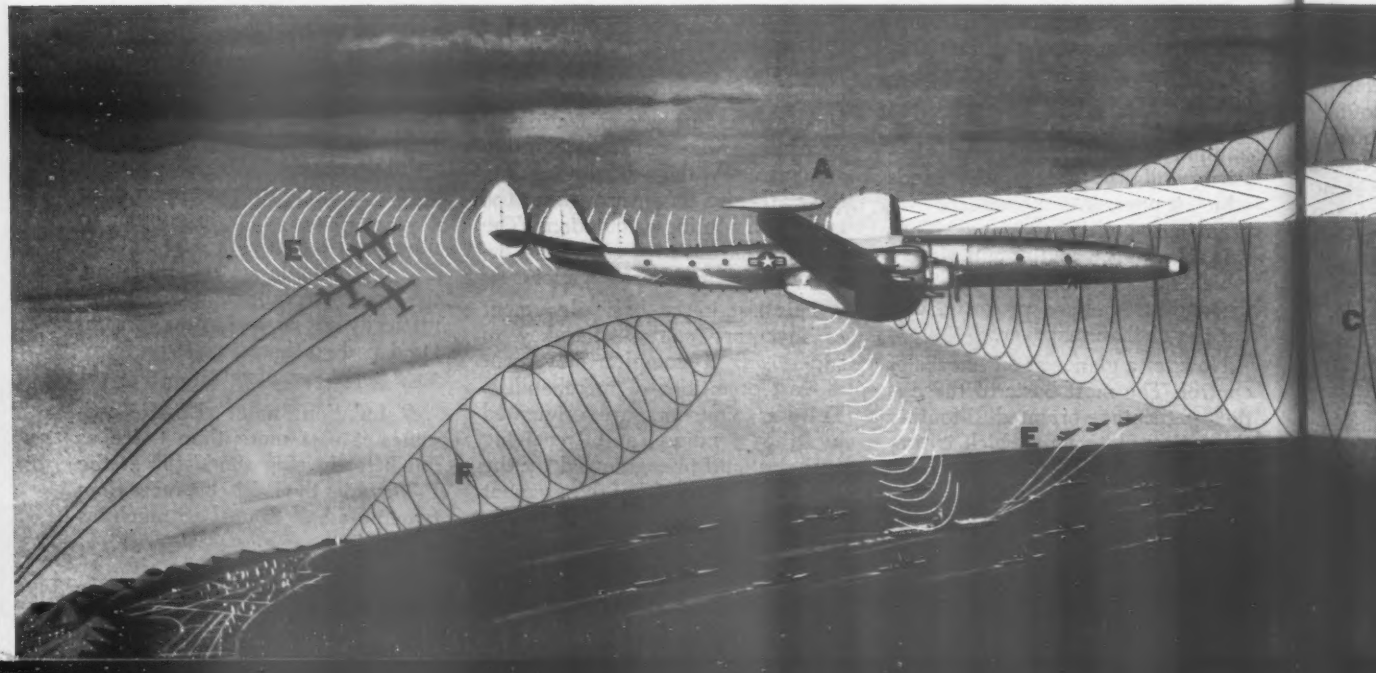
● Inflation note: USAF estimates it cost more than twice as much to develop the F-102 as the F-86, while the B-52 cost more than two-and-a-half times as much as the B-36.

New U.S. Concept for

TOTAL DEFENSE

In this age of awesome airborne nuclear weapons, a vast umbrella of airborne electronics will safeguard our nation against sneak attack

BELOW—A WEAPONS SYSTEM IN ACTION. An electronics-laden Super Constellation early-warning plane (**A**), patrolling our outermost defense perimeter hundreds of miles from our shores and borders, from its high altitude can "see" beyond the horizon and detect both high-flying and low-flying enemy aircraft (**B**). Using its powerful search radar (**C**) and height-finder radar beam (**D**) to pinpoint position of invaders, the patrol plane alerts our interceptors (**E**), which swarm aloft and are radar-guided through fog or darkness to intercept and destroy the aircraft per based rada uously ma

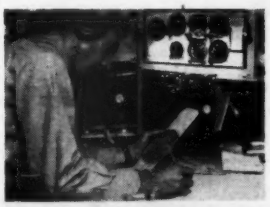


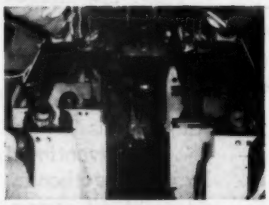
LEFT—EARLY-WARNING RADAR PATROL. Designated the WV-2 by U.S. Navy and EC-121 by USAF, these radar-domed Lockheed Super Constellations carry six tons of electronics and a 31-man crew. Super Constellations are ideal for this duty because of their famed all-weather stability and extremely long range.

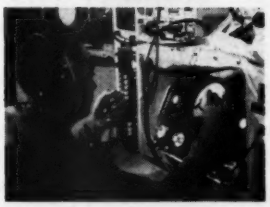
ABOVE—ROCKET-FIRING STARFIRE INTERCEPTOR. First of the almost-automatic all-weather interceptors, the Lockheed F-94C Starfire is an example of Lockheed's leadership in the design and development of airborne electronics. This deadly defender and other interceptors will soon be supplemented by—

Farsighted Pentagon planning and recent amazing technological developments by U.S. science and industry are rapidly making our nation's TOTAL DEFENSE system the most formidable in all history.

Lockheed's role in implementing our new Weapons System concept and in Systems management, is an important one. Thousands of Lockheed military aircraft, of *nine* widely different types, are already in service. Other advanced planes, missiles and electronic guidance devices are in production, undergoing tests or on the drawing boards at Lockheed. And Lockheed's pioneering leadership in design and development of airborne electronics will continue to contribute heavily to TOTAL DEFENSE.







STILL-SECRET F-104 SUPERSONIC JET FIGHTER. (Photo not yet released.) A high-ranking USAF officer said of the F-104: "This is a fighter pilot's dream. We feel confident that it is the fastest, highest-flying fighter in the air, anywhere."

THREE PHOTOS AT LEFT show crew members of Super Constellation early-warning plane at work. (Top) Navigator plotting a fix; (center) observers at radar consoles plotting altitude, speed and course of unidentified aircraft; (bottom) fighter-director charting position and path of approaching aircraft.

Lockheed

AIRCRAFT CORPORATION

California Division, Burbank, Calif.
Georgia Division, Marietta, Ga.
Missile Systems Division, Van Nuys, Calif.
Lockheed Air Terminal, Burbank, Calif.
Lockheed Aircraft Service, Burbank, Calif.

LOOK TO LOCKHEED FOR LEADERSHIP

its powerfu
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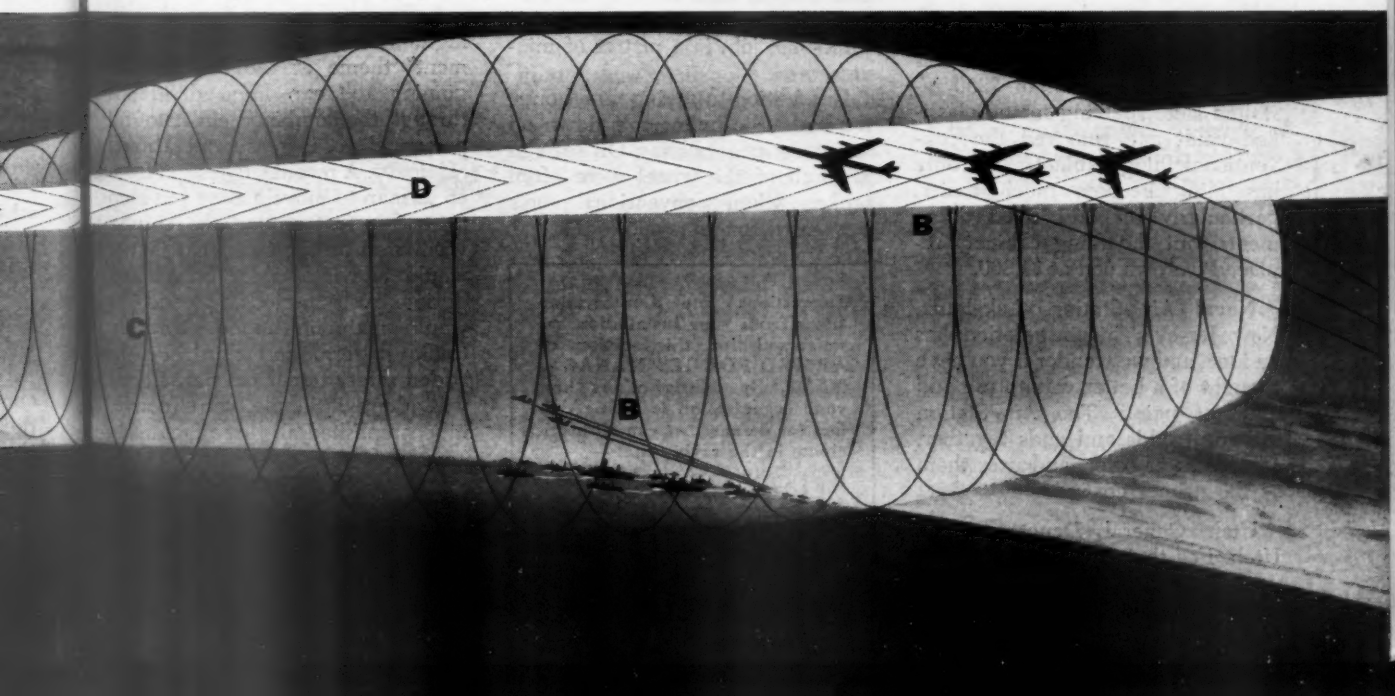
which swar
ntercept an

destroy the attackers with high-speed rockets or missiles. Any enemy aircraft penetrating our barrier patrol areas would be detected by shore-based radar stations (F) and Ground Observer Corps outposts continuously manned by patriotic civilians helping to keep our nation free.



Conservation through Suggestions

Camp Lejeune, North Carolina. Mr. Ellis R. Wilson, and Mr. Henry T. Jarman, received $300 and $120 respectively recently for their money-saving suggestions. Mr. Wilson's check was for his suggestion that supply units adopt the stitching machine method of sealing boxes which will result in an estimated savings of $19,280 in labor and materials the first year. Mr. Jarman actually received two checks for suggesting that his organization install wireless communications between the freight office and yard engines, and that they replace manually - operated tailgates with hydraulic lifters. His suggestion will save an estimated $26,064 annually.

United States Marine Corps Air Station, El Toro, California. Consolidation of shipments is saving about $1,500 quarterly in handling costs by using large returnable packing cases. They not only save several small cases, but have proven to afford better protection from weather and transit damages.

Hickam Air Force Base (PACAF) APO 915, San Francisco, California. CWO Mack L. Hewett, Chief of Administrative Services Division, for the sum of $250 installed steel shelving in the classified vault and removed the conventional filing cabinets. Not only has filing become much easier, particularly for odd sized documents, but the filing cabinets replaced were valued at $1,800.

Naval Air Station, Lakehurst, New Jersey. This installation has an idea, and we wonder if you have thought of a better way to use odd ends of paint? The Air Station mixes all odds and ends together, regardless of color, and uses them as the primer coat.

Utah General Depot, Ogden, Utah. For their suggestions to improve government operations 12 depot employees recently shared $425. William B. Howes, executive secretary, Incentive Awards Committeee, reported that in a single month, suggestions recently saved $10,620 in monetary benefits and 1,123 in man-hours to the government over a period of one year.

Fort Story, Virginia. Two Transportation Corps soldier-inventors with a lot of "pull" have figured out a way to save time, Army dollars—and a lot of hard work.

They are **Sergeant First Class Marvin S. Garrett** of **(Route No. 11) Princess Anne, Va.,** and **Specialist Second Class John Kelly** of **Chicago Heights, Ill.,** of the 458th Amphibious Truck Company here.

Their invention is a wheel puller, put together in about a month during their spare time from salvage parts and scrap metal.

The device is a hydraulic jack on wheels with two arms, projecting upward at a slight angle from the front, which make it resemble a mechanical crab.

The puller enables one man to pull a wheel from an Army DUKW – amphibious truck – normally a three-man job, in a matter of minutes.

In addition to saving man hours, the hydraulic puller cuts down on maintenance problems. Oil seals in the hub of the wheel were often broken when conventional tools were used for removal.

Suggestions and Conservation Ideas from your installation are welcomed for this section of ARMED FORCES MANAGEMENT. By telling others how your organization is saving dollars for defense, we can all participate in the saying that—

CONSERVATION IS CONTAGIOUS

LET'S START AN EPIDEMIC

Officials at the Management Branch here estimate that the wheel puller made by Garrett and Kelly saves the Army $2,500 a year.

What are the two inventors doing with all the time their clever tool saves?

They're trying to build a better jack—big enough to handle the 1,500-pound, nine and a half foot wheel of the Army's giant BARC.

Naval Air Station, Norfolk, Virginia. Charles E. Murphy, AMC, is really an idea man. Recently commended for his outstanding work for VS-30, he invented a nosewheel jack for the S2F Sentinel, and a tool for changing hydraulic seals. The Chief is working on another tool which he calls the "bullet guide", to simplify the task of aligning holes in the landing gear actuator on the Sentinel.

White Sands Proving Ground, New Mexico. Mr. William T. Stauffer has been awarded $250 for his third suggestion adopted since July, 1955. His latest, an idea to fabricate an automatic damper control and heat-stepping control circuit which will automatically change from heating to cooling cycles as ambient and chamber conditions vary, will save an estimated $7,200 each year. **White Sands Proving Ground,** has recently joined the growing list of installations offering a cash prize for suggestions to military personnel. Prizes of $25, $15 and $10 will be awarded for the three best suggestions received each month.

Bolling Air Force Base, Washington, D.C. The "Better-Management" theme at the Base is beginning to reap huge dividends through the combined efforts of all personnel to increase operational efficiency. A recent suggestion from an airman to move a base bus-stop thirty-five feet around the corner, was based on the facts that first it would alleviate traffic congestion during rush periods, second, it would maintain a more orderly traffic pattern, and third, be an added safety fatcor for passengers, was adopted. Simple, yet effective, it accomplished all three factors.

Naval Supply Depot, Scotia New York. A recent announcement shows $30,267 have been saved through suggestions submitted and

adopted during the calendar year of 1955. Incentive awards totaled $2,177 for the 88 suggestions adopted at the Supply Depot.

Fort Belvoir, Virginia. Major General Louis W. Prentiss, commanding general of the Engineer Center and Fort Belvoir, recently presented SFC Oliver M. Ziegler, of the Adjutant General's Personnel Processing Branch, with a Department of the Army Suggestion Award Certificate. SFC Ziegler made two suggestions which simplify the processing of enlisted personnel who are to be separated from the Army.

Lackland Air Force Base, Texas. Three civilian employees, Mrs. Mabel S. Kennedy, Mr. Will O. Wood and Mr. Edward P. Chemell, were recently presented with cash awards for their money-saving suggestions to increase base efficiency.

Headquarters Fifth Army, Chicago, Illinois. Employee suggestions received from military and civilian personnel during 1955 under the Fifth Army's incentive awards program will result in an estimated $284,872 first year savings. A recent winner was Mr. Lawrence A. Herron, former Executive Officer at Fort Sheridan, and presently a civilian employee in the G-1 Miscellaneous Division.

Department of the Navy, Washington, D.C. Results are being tabulated from the Records Disposal Month (March) throughout the Department of the Navy. Designed to accelerate records disposal and to insure compliance with disposal schedules, the management idea has resulted in a large savings for the entire department.

Seattle Army Terminal, Seattle, Washington. A banner month in suggestion awards and savings has been recorded at SAT with thirteen employees being presented with $465 in cash awards for ideas that will save the government more than $8,500 annually. Top stipend of $165 went to Richard C. Snow, property and supply supervisor for a new recommended requisitioning procedure for dry stores for Terminal harborcraft. Estimated savings are $5,400 annually. Seattle is credited with greater employee-participation than any other Transportation Corps installation, it was recently revealed by Colonel John B. Grinstead, Terminal Commander.

Fort Benning, Georgia. Twenty military and civilian employees who submitted suggestions saving the government more than $20,000 annually, were recently cited by Brigadier General Ernest A. Barlow, with certificates and cash awards in colorful ceremonies.

Olin Blessing Named Dow Corning Vice President

Olin D. Blessing, Sales Manager of Dow Corning Corporation, has been made a vice president of the company, it was announced here today by Dr. W. R. Collings, President, at the fall meeting of Dow Corning branch sales office managers.

When Dow Corning began doing business in February, 1943, Mr. Blessing was its first full-time employee, Dr. Collings said. At that time, he had a two man sales department, a handful of laboratory curiosities to sell, and one important customer, the U. S. Government. Starting with these, Blessing ran the sales volume up from its war-time first year of $1,000,000 to a peacetime annual volume of over $25,000,000. To do this, he built a sales organization of over 100 technically trained men selling over 200 commercial silicone products to thousands of customers in every major industrial market.

The present sales organization includes Mr. C. E. Sanford as Assistant Sales Manager, six product group sales managers with headquarters in Midland, and eight branch office managers responsible for sales in the areas served by New York, Chicago, Cleveland, Los Angeles, Detroit, Dallas, Atlanta, and Washington, D.C. In addition, Dow Corning has set up distributors in most of the principal industrial countries of the world, Dr. Collings said.

Low Ground Pressure Tractor Developed by Corps of Engineers

A special low ground pressure tractor has been developed by the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia, to tow "trains" of supplies and materiel over soft winter snow and summer muskeg in the Arctic.

Fabricated essentially of parts from a conventional tractor, it has a unit ground pressure of only 3.4 pounds per square inch . . . almost five pounds per square inch less than that of its standard counterpart.

The tractor powered by a six-cylinder diesel engine capable of 225 horsepower, is equipped with an extended frame which provides a track 160 inches long on the ground. Track "shoes," 54 inches wide, make the extremely low ground pressure possible.

Manufactured by the Peterson Tractor and Equipment Company of San Leandro, California, the tractor utilizes standard controls, steering clutches and transmission. It also incorporates a torque converter with a manual locking device, and a cab which provides protection and comfort for the operator.

PRODUC-TROL Visual Control

not only schedules,

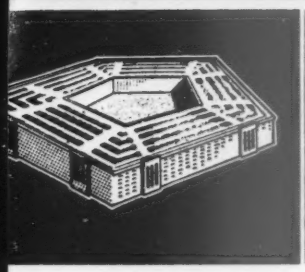
But **automatically checks with TIME, LINE and COLOR control**

- Original cost and upkeep low.
- Schedules and time checks operations.
- Historical record to back it up.
- Bad situations show automatically.
- Its simplicity has put it into world-wide use.
- Analyze 100 items in 10 seconds.

Effective Tools for Effective Management

WASSELL ORGANIZATION, INC.
Westport, Conn.

For more facts request No. 18 on reply card



Washington Management

Department of Defense. U. S. General Alfred M. Gruenther's retirement by the year's end as supreme commander of allied forces in Europe was announced recently by President Eisenhower. To succeed General Gruenther, who asked to be relieved for retirement, President Eisenhower has selected General Lauris Norstad, USAF, the first Air Force officer ever picked for the top NATO military post. The nomination of General Norstad was ratified promptly in Paris by the North Atlantic Treaty Organization Council.

Department of the Army. Activation of the first Army unit to fire the new REDSTONE missile was recently announced by Secretary of the Army Wilber M. Brucker. The cadre of the 217th Field Artillery Missile Batallion, made up from experienced missile troops, are being assembled at Redstone Arsenal, Huntsville, Alabama. The new unit will gain experience in test firing the weapon both for operational and development testing.

Department of the Air Force. The Tactical Air Command has received the first operational Douglas B-66 equipped for day and night operation, and with its radar bombing equipment, an all-weather bombing capability. The 17th Bomb Wing of TAC's Ninth Air Force at Hurlburt Air Force Base, Florida, is the first wing to receive the 600 to 700 mile per hour bomber.

Department of the Navy. Rear Admiral John Sylvester, USN, Commander Amphibious Group Four, has been named the overall commander of the amphibious task group which sailed on March 20th to join the U.S. Sixth Fleet in the Mediterranean. The task group is composed of USS TACONIC (AGC 17), USS ROCKBRIDGE (APA 228), USS MONROVIA (APA 31), USS PLYMOUTH ROCK (LSD 29), USS RANKIN (AKA 103), and USS BASSETT (APD 73). A reinforced Marine Corp Battalion, the 2nd, 8th Marines, Second Division, is a part of the group.

Department of Defense (AFPS). A new commercial storage plan for servicemen's household goods, which is expected to save the Army alone $5-million annually, has recently been announced. A Hoover Commission recommendation, the new plan calls for personal goods of military personnel overseas, to be stored commercially rather than in military warehouses. A large saving will be realized in packing and excessive shipping costs.

Department of the Army. The most modern concepts of military science will be embodied in the organization and equipment of the 101st Airborne Division which is to be activated this fall at Fort Campbell, Kentucky. The Division will have five combat groups, each being a self-contained force, and will have a total strength of approximately 11,500 as compared with a conventional airborne division with 17,300. With approximately 6,000 fewer personnel, and by utilizing new equipment, the 101st can be airlifted with approximately half the aircraft used in lifting the conventional airborne division. Major General Thomas L. Sherburne, Jr., will be the Commanding General upon activation.

Department of the Navy. Rear Admiral Walter F. Boone, USN, recently nominated to assume four star rank, has been assigned as Commander - in - Chief, Naval Forces, Eastern Atlantic and Mediterranean. Admiral Boone, who has been Superintendent, U.S. Naval Academy, and Commandant, Severn River Naval Command, relieved Admiral John H. Cassady, USN, who is retiring.

Department of the Air Force. Plans have recently been announced to use the TALOS, a new surface-to-air guided missile, in the air defense of the United States. The TALOS will be employed by the Continental Air Defense Command, at land installations and aboard ship. Developed by the U. S. Navy and built for them by Bendix Aviation Corporation, the TALOS, will be used in the event of an air attack on the United States.

United States Coast Guard. The three Coast Guard districts in the east are completing plans to link up a four-service string of air and sea installations from Maine to Miami in a co-ordinated net for search and rescue. The nets centering at Boston, New York and Miami, will give the search and rescue control center at Norfolk quick, simultaneous communication with all organizations who can assist in a search.

Department of the Army. Five heretofore temporary posts have been designated as permanent United States Army Installations. Fort (formerly Camp) Chaffee, Arkansas; Fort (formerly Camp) Gordon, Georgia; Fort Jackson, South Carolina; Fort (formerly Camp) Stewart, Georgia and Fort Leonard Wood, Missouri, are the new designees.

Department of Defense. Secretary of Defense Wilson has announced the appointment of Eger V. Murphree, as Special Assistant for Guided Missiles. Mr. Murphree will be responsible for direction and coordination of research, development, engineering and production of guided missile activity in the Department of Defense. Closely following an order, issued in directive form, security has been tightened on the premature release of information about new missiles and other items in the defense arsenal.

Department of the Navy. Announcement has been made of an award to the Shipbuilding Division of the Bethlehem Steel Company, Quincy, Massachusetts, of a contract to conduct design studies for a nuclear propulsion plant for a surface warship. The contract does not include design of the nuclear reactor or construction of the ship. The designs will be for a nuclear propulsion plant suitable for combatant surface types in the 8,000 to 12,000 ton range.

Department of the Air Force. A noted decrease in "time off for sickness" has been reported by the Air Force Surgeon's Office. An effective preventive medicine program is being credited with a large percentage of the decrease together with the reduction in new Air Force recruits.

Department of the Army. A new means of selecting Army and Air Force Regulars and Reservists for appointment to the United States Military Academy will be used this year. Applications will be accepted through the end of this month. The new selection system, the interview board, is designed to predict academic ability, leadership, potential, motivation for a military career. Those who rank highest in each component will be appointed in August, and those qualifying will be sent to the Army Preparatory School in anticipation of the March 1957 West Point entrance examinations.

Department of the Navy. Rear Admiral Robert L. Dennison, USN, nominated to be a Vice Admiral, has assumed duties as Commander, First Fleet. Admiral Dennison has been assigned as Assistant Chief of Naval Operations (Plans and Policy) and Director, Strategic Plans Division, Naval Operations.

Department of the Air Force. After consultation with the Canadian Government, the United States Government has announced that a contract for approximately $500,000 to begin training for manning operations and maintenance on the Distant Early Warning System (DEWLINE) is being negotiated by the Air Force with the Federal Electric Corporation, a subsidiary of the International Telephone and Telegraph Corporation.

Department of the Army. Lieutenant General Henry I. Hodes, USA, has been appointed commander of the U. S. Army in Europe, and nominated for the rank of full general. General Hodes who has commanded the Seventh Army, will be replaced by Lieutenant General Bruce C. Clarke.

Department of Defense. The Department of Defense announced recently that it is considering the adoption of a new method of selling certain types of military surplus through qualified dealers on a commission basis. Initial pilot operations are expected to cover electronic and aeronautical spares and are planned to begin this spring.

This action is in line with the Hoover Commission's report on the Government's surplus property disposal system, in which it recommended "that private distributors and disposal agents could profitably be used for selected classes of surplus commodities." In commenting on this recommendation, Secretary of Defense Wilson said that proposed sales method was being "considered particularly in connection with the disposal of surplus electronic, aeronautical and automotive equipment which, if the Government is to secure a fair return on its value, must be merchandised through established trade channels by qualified distributors without disruption of existing price structures."

In addition to this new surplus sales proposal, Secretary Wilson has adopted substantially all of the Commission's other recommendations in the Surplus Property Report. Among the noteworthy results already achieved is a 33⅓ percent increase over FY 1954 in the rate at which excess property is being utilized. Of this utilization during FY 1955, more than 115 million dollars worth was transferred directly to schools, hospitals, and other health and educational activities.

Flight Laboratory for Airborne Electronics Established by RCA at New Castle, Delaware

A Flight Laboratory for air and ground testing of airborne electronic equipmemnt and systems has been established by the Radio Corporation of America at the New Castle County Airport, New Castle, Delaware, it was reported by Theodore A. Smith, Vice President and General Manager, RCA Defense Electronic Products.

The new facility, he said, is now in limited operation and will be completely equipped with maintenance and laboratory test apparatus by May. It will be used for preflight and in-flight testing of RCA airborne equipment and fire control systems for military aircraft and for flights in connection with operational tests of RCA ground radar systems.

Charles L. Sharp, veteran test pilot and aeronautical engineer, has been appointed manager of the RCA Flight Laboratory. He will be responsible for all flight operations and maintenance of RCA aircraft and of military planes furnished by the Defense Department for test purposes.

● Counting the number of B-52 jet bombers to be ordered in fiscal 1957, the AF will have contracted for more planes than one-for-one replacement of Convair B-36s. Fort Worth produced nearly 400 of the piston-jet intercontinental bombers before phasing out in 1954.

● Report of the Killian Commission to President Eisenhower on Russian and American capabilities, later forwarded to the Air Force for study, and MIT's Lamplight Study for the Navy and USAF, would cost between $850 and $900 million in research and development projects.

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NEWS BRIEFS from the SERVICES

11th Air Division (Defense) APO 731, Seattle, Washington. A new incentive plaque, hand inscribed on leather, is awarded each quarter to the organization contributing the most toward improving its management program. The name of the winning squadron will be inscribed, and the unit allowed to display the plaque during the quarter.

Bureau of Supplies and Accounts, Department of the Navy, Washington, D.C. A "Forms and Publications Supply Office" will be officially activated within the Bureau on 1 July 1956. Headed by Commander James Walsh, SC, USN, the newest supply demand control point will be responsible for the control of approximately 10,000 different Navy forms and about 27,000 publications.

Army-Air Force Exchange Service, New York. More than $1,000 a day is being lost to welfare funds of the Army and the Air Force through the nonreturn of soft drink bottles taken from vending machines. Major General H. L. Peckham, Chief, A&AFES, in reporting the $400,000 fiscal year loss, stated that most of this amount could be saved with "bottle discipline." Installations who have concentrated on the prevention of bottle losses have reduced such losses from 60% to 90%.

Marine Corps Air Station, Cherry Point, North Carolina. General Randolph McCall Pate, USMC, Commandant of the Marine Corps, made a three-day visit to the station last month, his first since assuming his present office. Highlighting his visit, was a thirty minute flight in an F3D "Skynight" flown by Major Robert G. Klein, USMC. From an altitude of 15,000 feet over Morehead City and Camp Lejeune, they made a jet penetration under the control of a GCA unit, to Cherry Point.

U.S. Naval Air Facility, Oppama, Japan. Balloon-borne weather stations are being launched for flights across the Pacific at 30,000-foot altitudes. Weather instruments, including 50-watt radio transmitting equipment and necessary power supplies, are being carried in the 39 foot plastic balloons. Carrying about 350 pounds of ballast, sufficient for three to six day's flight, an automatic cut-off device terminates the flight and lowers the equipment by parachute.

Headquarters Alaskan Command, APO 949, Seattle, Washington. A new distinctive Alaskan Command emblem, portraying the combined striking power of the three component services, has been approved by the joint chiefs of staff. A polar bear emerging in sharp relief from Alaskan rugged terrain, was originated by Brigadier General Dolf E. Muehleisen, and completed by T/Sgt. Robert W. Danford, USAF. Additional important news to the Command was made in Washington recently, with TPA authorized for travel on the Alcan.

Headquarters USAREUR, APO 21, New York. An increase in the tactical air mobility of the Seventh Army is being made with the transfer of three helicopter companies. The 587th Cargo Helicopter Company, consisting of 21 Sikorsky H-34 light cargo type 'copters, has already departed aboard an aircraft carrier.

Naval Air Station, Lakehurst, New Jersey. Commander L. J. Mack assumed command recently of the newly commissioned Airship Airborne Early Warning Squadron One. The unit will fly the Goodyear ZPG-2W and operate from the Naval Air Station at Lakehurst.

Edward Gary Air Force Base, Texas. A three-day discussion of Bendix Aviation Corporation's vibration anlyzer used in connection with the cathode-ray tube Bendix Ignition Analyzer in wide-spread use throughout the Air Force, was held recently with representatives from the Air Materiel Command.

United States Coast Guard, Washington, D.C. Rear Admiral Henry T. Jewell, USCG, has assumed the duties as Chief, Office of Merchant Marine Safety. The position was formerly held by Rear Admiral H. C. Shepheard who retired at the end of January. Admiral Jewell prior to this assignment was Chief of Staff, 12th Coast Guard District, at San Francisco, California.

Wright-Patterson Air Force Base, Ohio. For assistance to the Korean Air Force, Major General Merrill D. Burnside, USAF, and Major General Paul E. Ruestow, USAF, were recently awarded the Distinguished Military Service Medal from the Republic of Korea. Lieutenant General Chung Yul Kim, Chief of Staff of the Republic of Korea Air Force, presented the awards.

U.S. Army, Hawaii. Army Secretary Wilber M. Brucker, recently designated as permanent Army installations eight reservations and forts in the Territory of Hawaii, including Forts Shafter and DeRussy. The move is an extension of plans to broaden the permanent facilities of the Army.

42nd Heavy Bomb Wing (SAC), Loring Air Force Base, Maine. Proud are the lads of the 42nd with their new B-52s. Switching from B-36's, they became the first SAC organization to be so equipped. Present B-36's are being dismantled gradually and will be used as spares for planes remaining in service.

Headquarters First Fleet, San Diego, California. The U.S. First Fleet, 35 ships and 15,000 men strong, will visit the San Francisco Bay area June 11-16 the Navy has announced.

The stopover by the Golden Gate will be made between phases of routine Pacific Fleet antisubmarine warfare and air defense exercises.

Ships that will participate in the sea maneuvers include the carriers Essex, Bon Homme Richard and

Boxer, the heavy cruisers Toledo and Bremerton, 15 destroyers, nine submarines and various support ships.

The First Fleet is commanded by Vice Adm. Herbert G. Hopwood, with headquarters at San Diego, Calif. During the exercises his flagship will be the Toledo.

Dow Air Force Base, Bangor, Maine. Winners recently of the $1000 cash award from Strategic Air Command Welfare Funds, for the base's accident-free month, represents a constant program in the numbered air force. Eighth Air Force led both the 2nd and the 15th Air Forces in this category for February.

Fort Sill, Oklahoma. Construction of a new 20,000 square foot hangar for helicopters of the Army Aviation Unit Training Command, was begun last month, and is scheduled to be completed in January 1957. Costing approximately a half-million dollars, it will fill a long-standing requirement at this installation.

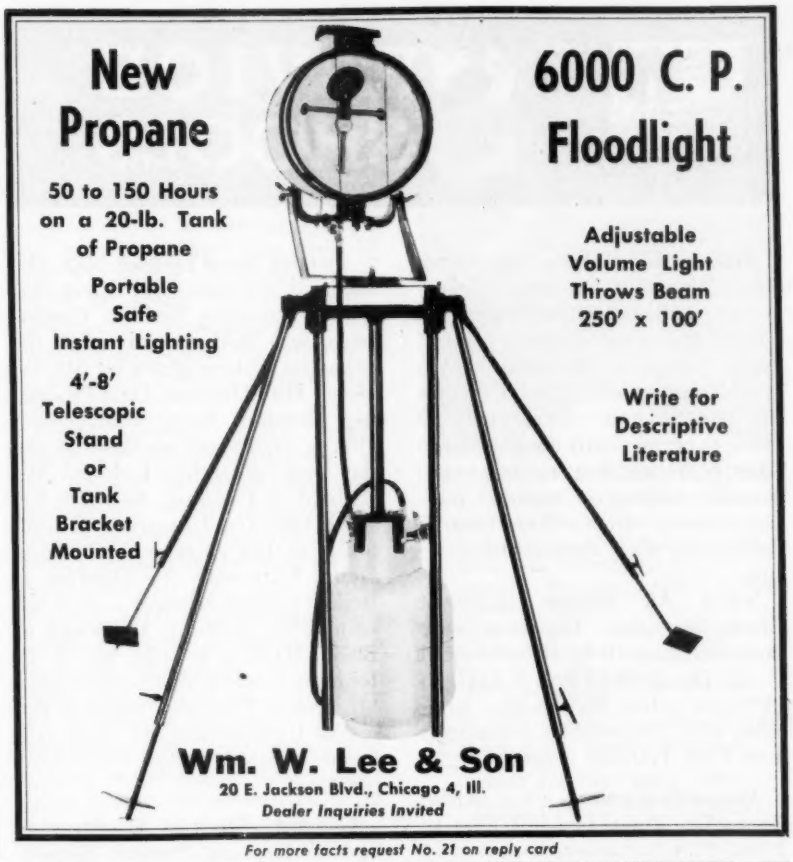
Fort Dix, New Jersey. Something new and beautiful tho eyed with caution by most of the personnel at Fort Dix, are the "fancy painted" MP vehicles. Painted in conjunction with a new Army regulation standardizing the markings of MP vehicles, a bold white stripe encircles the upper part of the automobile.

Marine Camps Renamed To Honor WWII Heroes

Washington (AFPS)—The names of five WWII marine heroes—one officer and four enlisted men—will be perpetuated with the renaming of five 3rd Marine Div. camps at Okinawa. All Medal of Honor winners, the men lost their lives during the bitter fighting on that island.

Marine Corps Hq. has announced that:

Camp Tengan has been renamed Camp Courtney in honor of Maj. Henry A. Courtney; Camp Easly is now Camp Hansen, named after Pvt. Dale M. Hansen; Camp Hinko will be called Camp Schwab for Pfc. Albert B. Schwab; Camp Napunja will be Camp Hauge after Cpl. Louis J. Hauge and Camp Kawaski was renamed Camp McTureous for Pvt. Robert M. McTureous.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New Navy Missile 'Petrel' Now Arms Some Planes

Washington (AFPS) — The "Petrel," the fourth addition to the naval arsenal of guided missiles, is in operation with the fleet, the Navy has disclosed.

A number of patrol aircraft now are equipped with the Petrel, an air-to-surface guided missile, a navy announcement said. Described as one of the Navy's more complex missiles, "both electronically and dynamically," the Petrel is designed primarily for use against enemy ships.

Names after a strong-winged seabird, the Petrel can be launched by planes beyond the range of a target's air defense system, and attack at high speeds with devastating effects.

An intricate electronic "brain" is essential to the Petrel, since the missile itself must "think" its evasive way to the target, the Navy said.

It was pointed out that use of the Petrel will save pilots from anti-aircraft hazards encountered during WWII.

The missile was developed under the technical direction of the Navy's Bureau of Ordnance by the National Bureau of Standards. It is produced by the Fairchild Engine and Aircraft Corp.

The addition of the Petrel to the guided missile family gives the Navy a fourth new lethal punch. The other three are the Sparrow, an air-to-air weapon; the Regulus, a surface-to-surface type, and the Terrier, a surface-to-air missile which can be launched from submarines.

Hamilton Developing Nuclear Controls

Hamilton Standard, division of United Aircraft Corporation, Windsor Locks, Conn., has an engineering team at work on the problem of providing controls for nuclear aircraft engines, Erle Martin, general manager, said.

"The company," Mr. Martin said, "is applying the problem its six-year background of experience in designing and producing electronic and hydromechanical controls for gas turbine engines."

SERVICE SCHOOLS

Francis E. Warren Air Force Base, Wyoming. A revised officer course went into effect last month called the Unit Officer Course. Major Joseph S. Anderson, USAF, Base Training Officer, advised that the new 40-hour course will be given to permanently assigned company grade and warrant officers to provide training in selected military subjects which will aid them in developing their managerial abilities.

Naval Air Station, Patuxent River, Maryland. Diplomas were presented recently by Rear Admiral C. H. Duerfeldt, USN, NATC, to 21 Naval pilots and civilian engineers who completed a six-months Test Pilot Training School.

Armored Center, Fort Knox, Kentucky. Major General John L. Ryan, USA, has assumed command of the Armored Center relieving Major General Charles V. Bromley Jr., who retired on 31 March. General Ryan has served as Deputy Chief of Staff, Army Forces Far East, since December 1955.

University of Akron, Akron, Ohio. A conference entitled "Team Creative Thinking" was held April 5th with more than 150 representatives of business and industry in attendance. Main speakers included Roger Honebrink of General Electric and J. Bruce Buckler of IBM, who outlined creative thinking techniques of their corporations, and Alex Osborn, president of the Creative Education Foundation, who demonstrated methods of creative thinking to the solution of management problems.

McConnell Air Force Base, Kansas. An enviable record has recently been released showing more than 5,000 officer crew members have been graduated for the Strategic Air Command B-47 program, during the years 1951 through 1955. At the present time 32 crews from the B-47 transition course are graduated every ten training days.

Twelfth Naval District, NAS Alameda, California. An Electronic Data Processing Systems Conference, was held recently with the principal address given by Mr. W. Henry Hill, Director, Data Processing Division, Navy Management Office. Additional speakers in the day-long conference included Mr. Richard G. Canning, Associate Reseach Director, University of California at Los Angeles; Dr. Mason Haire, University of California at Berkeley; Rear Admiral L. A. Kniskern, USN, BuShips; Mr. Virgil F. Blank, Haskins & Sells; Mr. N. E. Johnson, Lockheed Aircraft Corp.; Mr. Dennis Finnigan, Stanford Research Institute and Mr. Williamar Leslie, United States Steel Corporation.

General Electric Corporation, Special Defense Projects Department, Schenectady, New York. A most successful technical forum for missile engineers and scientists was held on April 3rd at the Hotel Commodore in New York. New fields created by advances in missile technology was the subject and included were discussions in aerophysics, systems engineering and hypersonic experimentation.

United States Military Academy, United States Naval Academy, United States Air Force Academy. All three service academies have new superintendents. Major General Garrison H. Davidson, USA, at the Military Academy; at the Naval Academy, Rear Admiral William R. Smedberg; and at the Air Force Academy, Major General James E. Briggs.

Department of the Army. Secretary of the Army Wilber M. Brucker and his Civilian Aides, representing every State, the District of Columbia and the Territory of Hawaii, and the Commanders of Armies in the United States held their third annual conferences April 4-6 at Fort Bliss, Texas.

Commanders of the Continental Army Command, Fort Monroe, Virginia; the Army Antiaircraft Artillery Command, Colorado Springs, Colorado; U.S. Army Pacific, Fort Shafter, T.H., and the Military District of Washington, as well as commanders of the six Armies in the United States, attended both conferences.

Headquarters Potomac River Naval Command, Washington, D.C. Twenty-six Management Personnel from Naval activities within the Potomac River Naval Command attended a Paperwork Management Seminar conducted by the District Records Management Office of the staff of the Commandant, Potomac River Naval Command from 19 March to 23 March 1956. The various management techniques used by the Navy to promote efficiency in its paperwork problems were presented and discussed.

Headquarters Air Force R.O.T.C., Maxwell Air Force Base, Alabama. AFROTC Headquarters, commanded by Major General M. K. Deichelmann, USAF, who administer 198 AFROTC detachments and 18 sub-detachments at more than 200 colleges and universities, has completed a move from downtown Montgomery to a permanent site at Maxwell Air Force Base, Alabama. Nearly 100,000 students are enrolled in the AFROTC program.

Cornell University, Ithaca, New York. The Annual Cornell University Industrial Engineering Seminars will be held June 12 through June 15, 1956. The seminars provide an opportunity for critical study and reappraisal of some of the major problems of manufacturing, planning and control. A series of seminar workshops covering Industrial Management, Manufacturing Engineering, Small Plant Management, Methods Engineering, Applied Industrial Statistics and Industrial Marketing, will make the seminars interesting to attend.

Fort Lee, Virginia. An Aerial Delivery Research Symposium with representatives from all services, industrial and educational institutions, was held last month at Fort Lee and Camp Pickett, Virginia. In addition to the seminar sessions, a

demonstration of air dropping of supplies from different types of aircraft stimulated creative thinking to solve present and future aerial delivery problems.

Department of the Air Force. In cooperation with all military services and the Department of Commerce, the second Joint Military-Industry Symposium on Packaging and Materials Handling, will be held in the Departmental and Department of Commerce Auditoriums in Washington, D.C., on October 9, 10 and 11. The exchange of information in a similar symposium held last year contributed greatly to a better understanding of military requirements for packaging and materials handling in a world-wide supply system.

Strategic Air Command, Offutt Air Force Base, Nebraska. A three-day conference was held recently with 40 air refueling squadron commanders in attendance. Continually interested in developments and techniques of transferring fuel from air tankers, the commanders were welcomed by General Curtis E. LeMay, SAC's Commander. In his address the general told the conferees that aerial tankers were completing hookups at the rate of one each three and one-half minutes around the clock.

Army Supply Management Course, Fort Lee, Virginia. Diplomas were recently presented to 98 graduating members of the Supply Management Course, the fifth to graduate, by General Maxwell D. Taylor, USA, Army Chief of Staff. General Taylor praised the support given by Army supply organizations to the nation's security, and urged each graduate to continue thinking in simplification not only in planning and estimates, but also in the vast systems of supply.

Illinois Institute of Technology, Chicago, Illinois. A two-day conference on systems and procedures will be held at the Institute on May 17 and 18. The theme of "Progress through Industrial Engineering", will include conferences on such subjects as materials handling, wage incentives, work study, work measurement, quality control, and cost control. Noted leaders in the fields of management and engineering slated as featured speakers, will make the conference a "must" for many within the Armed Forces.

Automatic Data Processing Systems Subject of April Pentagon Meeting

An Armed Forces conference on automatic data processing systems was held at the Pentagon April 10 and 11, under chairmanship of Lloyd H. Mulit, Director of Requirements, Procurememnt and Distribution, Office of Assistant Secretary of Defense (Supply and Logistics).

The magnitude of the supply operations in the Department of Defense and the volume of records, transactions, and computations necessary in supporting the Armed Forces offers a fertile field for applying this relatively new concept of automatic data processing, made possible by the developments in electronic computers.

The purpose of the conference was to provide opportunity for the interchange of knowledge, techniques, applications, and experiences among representatives of the Army, Navy, Air Force, and Marine Corps.

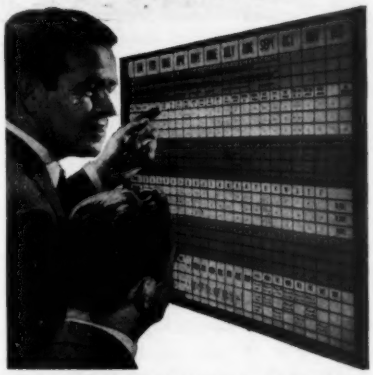
Prominent speakers from government, industry, and the military services discussed the latest developments in application of this new principle, as well as new equipment and future applications. The military services each discussed their individual programs and described actual applications which are either in operation or shortly to begin.

This was the first joint conference of this subject to be held by the Defense Department and is prompted by the increasing use of electronic computers in handlilng large masses of data in business type operations of the military establishment.

More Accurate Results Expected From Standardization of Test Fabric

More accurate fungus control studies are expected to result from the standardization of test fabric now being proposed by the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia, to government and industrial laboratories throughout the country.

How To Get Things Done Better And Faster



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The basis of the plan suggested by the Labs' Fungus Control Section is the use of a standard eight ounce cotton duck by all fungicide manufacturers, textile research organizations and Department of Defense laboratories engaged in soil burial, weathering and related tests.

Use of a standard fabric should result in more accurate comparative results. It would permit, for example, direct comparison of the effectiveness of fungicides tested at different times, comparison of the activity of soil beds used by different agencies, and the changes in activity of a given soil bed from one test period to another.

• Shortage of maintenance personnel has forced USAF to put some of its newly delivered F-100 Super Sabres in temporary storage. AF simultaneously is assigning fewer F-100s to its combat units. Stored planes and those deleted from combat wings will be used to equip other combat units ahead of schedule.

Book Reviews

by D. D. Corrigan

In the Beginning

"ENCYCLOPAEDIA BRITANNICA," 1956 Edition, 24 volumes.

Scotland is known for many distinctive things — good whiskey, famous Harris tweeds, the renowned thistle, and as the birthplace of the Encyclopaedia Britannica. For it was in Edinburgh in 1768, that "a society of gentlemen" published and printed the first set, consisting of three volumes, 2,670 pages, and 160 copperplates. The originators probably could not foresee the future possibilities of their small venture, or that this enterprise would grow to an annual sales of 36 million dollars.

First known as a dictionary of arts and sciences, by the year 1776 articles were added to the second edition on history and biography, subjects long omitted by encyclopaedias. By the fourth edition articles on mathematics were added, making the set of greater value to the reader. Sir Walter Scott, Thomas DeQuincey, Robert Stevenson, and Antonio Panizzi were early contributors. By the ninth edition America was found to be the best market for sales as 45,000 sets were sold in the United States between 1875 and 1898. At this time no international copyrights were recognized and sales must have actually reached proportions closer to hundreds of thousands, by unauthorized versions being published and sold.

In May, 1901, all rights, copyrights, manuscripts and plates were purchased by Messrs. Hooper and Jackson, and the enterprise was soon moved to New York City. Sears, Roebuck & Company became the new owners in 1927 through the interest of their president, the famous philanthropist, Julius Rosenwald. In 1943 Sears donated the Britannica to the University of Chicago. Many problems arose when the University took active control, but were solved when William Benton, ex-advertising man, former Senator, and at that time a Vice-President of the University of Chicago bought out the common stock and added working capital. The University retained the preferred stock and receives an annual income from this source.

Every year now a complete new edition of the Encyclopaedia is printed. This means that each set is up-to-date, and a book of the year keeps purchasers of past editions posted on current developments. New contributors in the twentieth century were such authorities as Marshal Foch, Albert Einstein, Madame Curie, and Elihu Root.

At the present time the business office of this organization is located on Michigan Avenue in Chicago, Illinois. Editorial advice and consultation are used of the faculties of the University of Chicago, along with committee members of the faculties of Oxford, Cambridge, and London Universities. Robert C. Preble became president of Encyclopaedia Britannica in 1950. There are 23 divisional offices with representatives, contributors, and buyers across the world.

This outstanding organization has progressed steadily from its early years of infancy in Scotland, but the aim and purpose has always been the same—knowledge and education.

Question and Answer Book

"THE ANSWER BOOK ON NAVAL SOCIAL CUSTOMS," by Ester Wier and Dorothy Coffin Hickey. (Military Service Publishing Company. $2.50, 122 pages).

Two Navy wives decided a book was needed to inform young officers and wives, new to the Navy, of information on the social customs of the Navy. The problems and lack of knowledge of established customs can create dissatisfaction and embarrassment. The authors do not stress a rigid formality or a laxness, but strive to find a middle of the road path for pleasant social relationships.

The text is written in a question and answer form and covers social calls, social occasions, going aboard ship, formal and informal parties. Calling cards, invitations, and replies are carefully detailed. Tips are given on how to plan a bridal shower, barbecue, or dessert bridge. How to go through a receiving line, how to make introductions, proper boat etiquette, and conduct aboard ship are a few of the varied subjects receiving answers.

Illustrations of insignia and a glossary of naval terms at the end of the book are a good reference. Officers and wives should find this answer book a pathway to rewarding friendships by following this guide.

A Study in Three Dimension

"THE GENTLEMAN AND THE TIGER," Edited by Harold C. Syrett. (Lippincott, $6.00, 375 pages).

This autobiography of George B. McClellan, Jr., is portrayed in a three dimensional view to the reader. First, as the son of the famous Civil War General; secondly, as a person in his own right; and finally, against the backdrop of a changing era. Personalities such as Theodore Roosevelt, J. P. Morgan, Carnegie, fill the scenes with personal recollections. William Jennings Bryan is seen as a warm and kind person contrasted to McClellan's idea of Woodrow Wilson as cold and cynical. Theodore Roosevelt is seen in vivid terms by his telegram to the widow of Grover Cleveland, "Am greatly distressed to hear of your husband's death. Hope funeral will not be on Friday as I want to go to the Harvard-Yale boat race that day."

The original typewritten manuscript of McClellan was entrusted to the New York Historical Society with the understanding it would not be published until his wife's death. Usually introductions are dreary and monotonous, but the rather long prologue by the editor, Harold C. Syrett is brilliant and engaging and furnishes the clues necessary for reading the actual biography.

McClellan was born an aristocrat, a gentleman, and had enough private funds to do as he pleased. Newspaper work was tried but dis-

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carded in favor of politics. The pleasant years of his life he feels were those spent in the House. The sidelights, the so-called un-important items that McClellan discusses give a picture of the feelings of the period. History tells of the important events, but autobiographies tell us the inside happenings.

Intrigues and emotions ran high in the House at this time. Three types of people were represented —those in earnest, those making money, and those having a good time. Members spoke either for the other members, for the gallery, or for the press.

McClellan believed Congressmen should not be paid too much as they should be dedicated to their career, but when he became mayor of New York his ideas on salaries changed. He firmly felt the mayor needed more than $15,000 a year to properly entertain, the present sum being very insufficient unless the mayor had a private income.

Bribes, protection, unqualified appointments, corrupt bargains, unwarranted favors, axes to grind, and incompetent department heads were some of the problems the mayor of New York City had to meet in the years 1903-09. YES and NOT were dangerous words to use. Decisions and actions must be carefully prepared. Tammany Hall put McClellan in power and his hands were often tied. He did try to improve conditions, but he was up against a big system. Liquor, prostitution and gambling always remained the most serious problems he had to deal with in his position.

During his second term, McClellan was without the support of the Democratic party, and he was beset to find honest and reliable men due to his lowered prestige and the low salaries offered. Public improvements were undertaken, several bridges were built, the first subway was opened, 35 miles of new wharfage was built, new terminals were constructed, transportation was improved, and gas lamps were replaced with electricity during McClellan's second term.

McClellan soon found that politics cannot be played by a self-respecting man under the conditions present at that time, and without any support. He wanted to be governor and hoped to become afterwards the Presidential nominee, but his break with Tammany Hall cost him any further political success. The corruption of politics during the Tammany Hall reign, the opinions of a Representative of the House and the mayor of New York, give an honest but prejudiced view of a changing era through the eyes of the gentleman (McClellan) who rode the tiger (Tammany Hall).

How to Manage Yourself

"NEW GUIDE TO INTELLIGENT REDUCING," by Gayelord Hauser (Farrar, Straus, and Young, 309 pages, $3.00).

To meet Gayelord Hauser is as exhilarating as tasting the food he suggests eating. Mr. Hauser abounds in enthusiasm, humor, and compassion. His zest for good eating habits is contagious, and he is a walking specimen of the result of his own teachings. His youthful appearance, continuous vitality, and searching interest in living leaves his friends and students breathless and anxious to learn his methods.

No more is reducing a word to be scoffed at or a fad to receive sneers. Intelligent men and women across the globe are learning that

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good dietary habits lead to good health, good physical being, and greater happiness. Men are finding that reducing the waist line and diminishing those extra bulges is rewarding, and that reducing can be fun by following Hauser's ideas, as new tastes are developed and food tastes better than ever before.

This book is written in a conversational tone and in this informal style is more like sitting across the table from the author and listening to him speak. His words tell more than "how to eat," but describes "how to live," with emphasis on rediscovering a new "YOU."

It is possible to lose weight without counting calories, without strict dieting, without drugs, and without strenuous exercise. It is possible to lose weight by eating six times a day if you learn to enjoy and hunger for real foods—lean meats and fish, fresh fruits and vegetables and natural foods. Certain foods such as yogurt, sunshine cocktails, pepcocktails, brewers yeast, wheat germ and blackstrap molasses have become synonymous with the name of Hauser. These wonder foods are a rich source of vitamins and not only do they satisfy the nutritional needs of the body, but can be prepared in a number of appetizing ways.

Anyone who is overweight or who is interested in good eating, will enjoy the new approach given by Gayelord Hauser and will appreciate his tips on how to reduce and stay reduced for life.

Step By Step

This book is designed to clarify some of the problems involved in preparing and reporting on financial statements.

Audited statements usually represent the cooperative effort of both management and the public accountant. Management assembles the data and prepares the statements upon the basis of its first hand knowledge of the enterprise. The public accountant examines, edits, and sometimes restyles the statements, and reports upon the fairness of their presentation and their compliance with generally accepted accounting principles.

Both the private and the public accountant therefore need to know (1) how to prepare fair statements, (2) when they comply with generally accepted accounting principles, and (3) what are generally accepted reporting standards. Each needs to know what types of statements most clearly and effectively serve the purposes for which they are intended, and each needs to know how to express financial information clearly and readably. The book is directed to both these groups and to those who aim eventually to ally themselves with either group. It is designed to assist accountants at all levels, regardless of type of training or length of experience.—From "REPORT WRITING FOR ACCOUNTANTS," by Jennie M. Palen, C.P.A., (Prentice-Hall. $9.25, 602 pages).

Recommended Reading

"GOVERNMENT STATISTICS FOR BUSINESS USE," edited by Philip M. Hauser and William R. Leonard. (John Wiley & Sons, $8.50, 440 pages).

This second edition contains the studies of twenty specialists, covering the major fields of economic activity. The content and purposes of the main series of official statistics are described, with suggestions for their applications to practical decisions.

"POLITICAL HANDBOOK OF THE WORLD, 1955," edited by Walter H. Mallory (Harper, $3.75, 228 pages).

A political summary of each nation, leaders, cabinet, parties and events taking place in 1955. Recorded are the changes in leadership across the world.

"GUIDED MISSILES IN WAR AND PEACE," by Nels A. Parson, Jr. (Harvard University Press, $3.50, 151 pages).

For those who would know more about the missile operation and the impact the guided missile holds for society.

"NIXON," by Ralph de Toledano (Henry Holt and Company, $3.00).

The story of the young man who is the Vice President, an account of a colorful career.

"FORBIDDEN AREA," by Pat Frank (Lippincott, $3.50).

A thriller of a novel, about an Air Force Major and the other members of the Intentions of the Enemy Group. Exciting, original, and with suspense.

"THE GUN COLLECTOR'S HANDBOOK OF VALUES," by Charles E. Chapel (Coward-McCann, $9.00, 398 pages).

Forty-eight full page plates, illustrating close to 600 arms. The gun collector can tell from this handbook how much his guns are worth in dollars and cents.

"THE FABULOUS FUTURE: America in 1980" (Dutton, $3.50, 205 pages).

As seen by David Sarnoff, John von Neumann, George Meaney, Nathan M. Pusey, Earl Warren, Crawford H. Greenewalt, George M. Humphrey, Adlai Stevenson, Robert E. Sherwood, Charles P. Taft, and Henry R. Luce.

RCA Develops First All-Transistor Marker-Beacon Receiver for Planes

The first all-transistor electronic marker-beacon receiver for commercial and military aircraft—a flyweight 15-ounce navigation aid—has been developed by the Radio Corporation of America, it was announced by Theodore A. Smith, Vice President and General Manager, RCA Defense Electronic Products.

"The new marker-beacon receiver is the smallest and lightest ever developed and operates on only a fraction of the power normally required by similar existing equipment," said Mr. Smith. "It requires only three-quarters of a watt —or less power than is needed to light a standard flashlight bulb. The wattage requirements of tube-type receivers are many times greater.

"Production of the RCA marker-beacon receiver is planned for later this year. The navigational aid is designed for use in military aircraft, commercial airliners, and business and private planes."

Electronic marker-beacon receivers are used to provide pilots with positive "guideposts" in navigation and in landings under instrument conditions. They tell the pilot by visual or aural signal when he is over airfield and airlane marker-beacon transmitters on the ground in identifiable locations.

(In the preceding installment our design had reached the type idea structure of the whole organization-to-be; we had worked out the internal structure of the seeing-to-the-doing unit of ideas (Atomos$_x$) to include the three contributions essential to an Atomos$_x$ idea production; and we had identified these contributions as Basic Policy, Complementary Policy, and Specialties. Then we started the design of the lesser included ideas of Complementary Policy (to be embodied in the executive group). We had shown the error of "functional" executives; we had developed the need for the organization to maintain itself in a state of harmonious adjustment to its environment; and we had said that all organizations for human enterprise—business, government, military and social—had the same six sets of relationships to environment.)

ORGANIZATION—From Empiricism to Principle

By Colonel Leland B. Kuhre

Chapter Five

Now, with the preceding development as essential background for understanding the next step, let us return to our design problem where we left off in saying: "The Complementary Policy mission cannot be generated into lesser included *whole* missions without destroying the concept of the Atomos$_x$, yet in an Atomos$_x$ the idea of complementary policy is too big for one mind."

The six lesser included ideas of Complementary Policy (called "cognizance" in Figure No. 6) are shown in Figure No. 13 as being the six sets of relationships common to all organizations.

Something must come into the organization from *sources,* and thus there are relationships with sources to be maintained in a state of harmonious adjustment.(1) Inside the organization there are *internal relationships* to be maintained in a state of harmonious adjustment.(2) The product of the organization goes to recipients, and thus there are relationships with *recipients* to be maintained.(3) . . . in combat organizations the recipient (to receive projectiles) is the enemy. The whole organization "rests" in the public, and thus there are relationships with the *public* to be maintained in a state of harmonious adjustment.(4) There are coordinate organizations adjacent to the organization (under the same next higher authority, or engaged in the same field of activity), and thus there are relationships with *coordinate organizations* to be maintained in a state of harmonious adjustment.(5) Lastly, there are other organizations (Government, associations, etc.) adjacent to the organization, and thus there are relationships with *other organizations* to be maintained in a state of harmonious adjustment.(6)

The idea involved is the taking of *cognizance* of each of these sets of relationships. Thus, in the nucleus of the Atomos$_x$ (Figure No. 6) there are the six "cognizances" of the six sets of relationships. As problems or situations come into the Atomos$_x$, the act of locating it in one of the six sets of relationships automatically and concurrently provides the affinity for it to go to the appropriate cognizance. (Concurrently, the specialty involved causes the affinity to the appropriate specialty).

The formulas for the "cognizances" have been developed in test and usage, but are not presented here. When the ideas are embodied, the position title is Assistant Chief of Staff, Assistant Executive Vice President, and so on according to the organization. Each takes cognizance of a problem or situation according to its location in the sets of relationships; and each (being generalist) has a background of the other five sets of relationships. Having taken cognizance he proceeds to cause a full solution within the Atomos$_x$, with a view to the proper Atomos$_x$ end-product if such is indicated.

If we may take a parenthetical digression for a moment: You probably have noticed how the *six cognizances* fit the six-sided nucleus of the Atomos$_x$. This matching of six and six is entirely coincidental. The development of the six sets of relationships was independent and apart from the symbolism of the Pneuma as a hexagon; in fact, the graphic representation of the Atomos with its hexagonal nucleus had not been developed when the six sets of relationships were found. I have wondered many times about the coincidence of "six and six"—whether or not there was some meaning in it. In any event, the fact the two ideas meshed in graphical representation was most comforting at the time.

To return to the problem of adjustment to environment—we left it not yet fully handled. The previous six sets of relationships are those of space. There are also relationships in time. There are three of these: Future, Present and Past.

Awareness of the Future (close,

intermediate, and long range) is an obvious requirement if surprise is to be prevented by converting the initially vague future into predicted situations from which plans are constructed for execution when the predicted situation arrives. The Past, as we use it, commences as soon as you have read this sentence; and it extends into the recorded history of the whole organization below the Atomos$_x$ as far as the situation requires recorded information. The Past continually contributes factual and statistical information to the Atomos$_x$ so that it can better plan the Future. And the Future continually verifies the practicability of its plans with the facts of the Past.

The Future and the Past overlap in the Present as the predicted situations arrive, become directives instead of plans, and pass to the cognizance of the Past. It becomes obvious then, that neither the Future nor the Past can be independent or separate ideas within the Atomos$_x$, for neither of them can perceive the totality of the situation. When these ideas are embodied the position title of Future is Assistant *to* the Chief of Staff (Executive) (Executive Vice President) (and so on according to the usage in the particular organization) for Planning and Programming. The position title of Past is Assistant *to* the Chief of Staff (Executive) (Executive Vice President) (and so on according to the usage in the particular organization) for Comptroller Functions. Both of these ideas have been tested in application sufficiently to justify the inclusion of the concepts in the general theory at this time.

The Present (in its relativity to the Future and Past above) is the idea of the immediate present on a day to day (yesterday, today, tomorrow) basis. Expressed in other terms, it might be called "routine administration." The individual embodiment of this idea has not been tested in practice but the test would start with the position title of Assistant *to* the Chief of Staff (Executive) (Executive Vice President) (and so on) for Administration. A careful definition of "administration" should be required to conform to the concept, and it might be necessary to use an adjective such as "current" to keep the scope in bounds, and in its proper relativity within the Atomos$_x$.

The formulary for the above concepts has been developed but is not presented here.

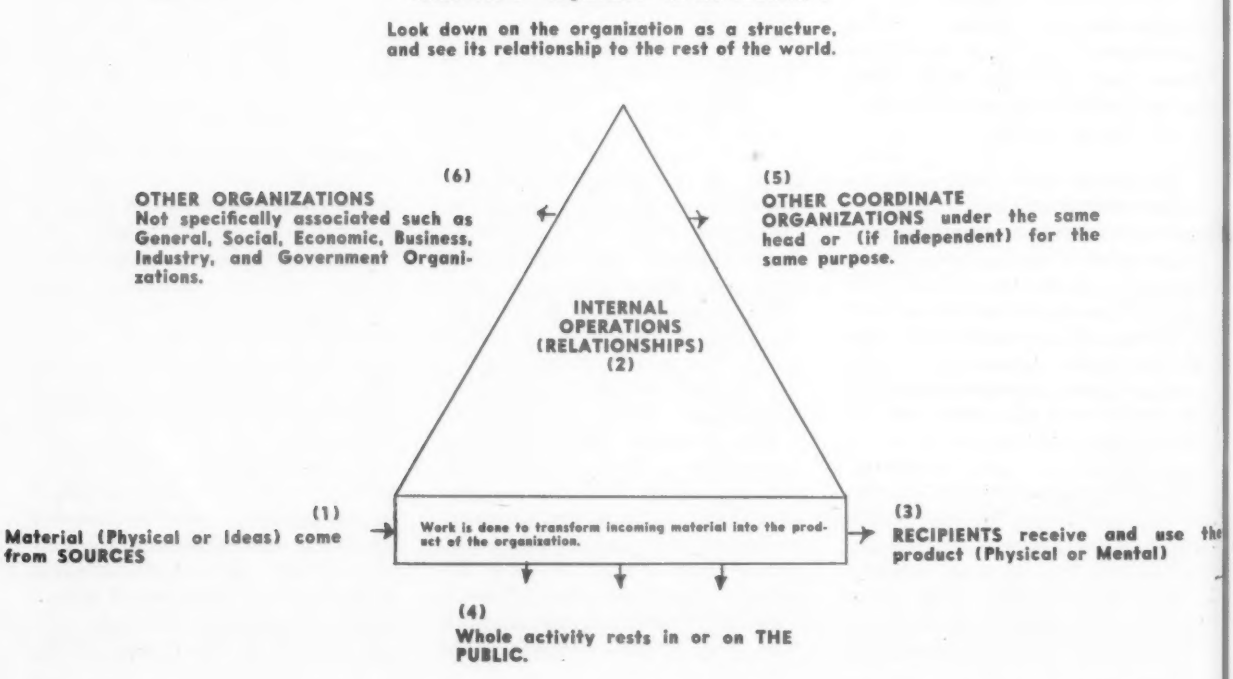
The complete Atomos$_x$ has been designed for any organization for any purpose as single entity of ideas appropriate to the Pneuma$_x$ (its nucleus idea). Every idea within the Atomos has been identified as appropriate to one mind. Each idea is expressed as a single whole idea (its pneuma) as the responsibility of the mind that is to embody it. And with each idea is the type mission (six-part) that tells how the responsibility is discharged so as to contribute to the Atomos$_x$ as a whole and maintain the relativity, order and structure of all of the ideas.

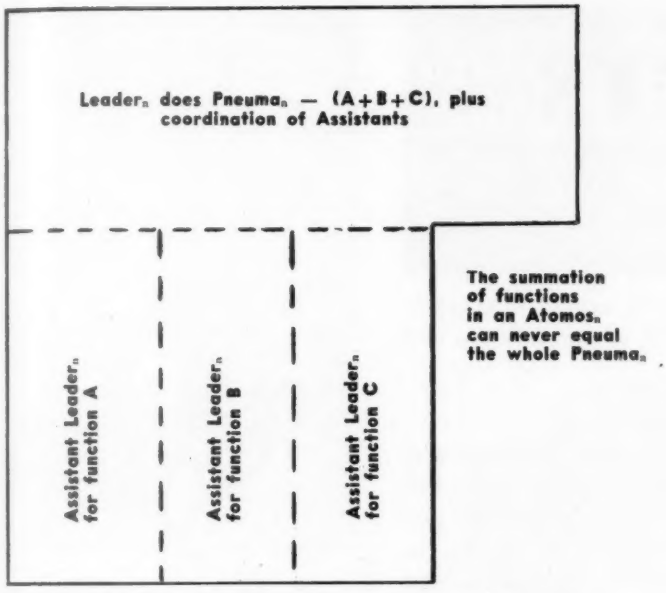
Parenthetically, lest you might think that these idea structures are very large and will require a lot of people to energize all of them, let me say that we embody from the center of the Atomos$_x$ out toward the circumference. Only those ideas are embodied for which there is a need, and it can be seen that the cost of embodiment will return dividends greater than the cost. But, any idea that is not embodied is not lost—it retains its identity as a position unoccupied; and it defaults in toward the center of the Atomos$_x$ until it finds an embodiment. For example, assume a specialty$_2$ is not embodied. Assume a problem or situation comes into the Atomos$_x$ with an affinity for the specialty$_2$. The problem or situation "defaults"

Figure No. 13

THE SIX SETS OF RELATIONSHIPS
(Each one a "cognizance" in the Atomos$_x$*)

Look down on the organization as a structure, and see its relationship to the rest of the world.


(6)
OTHER ORGANIZATIONS
Not specifically associated such as General, Social, Economic, Business, Industry, and Government Organizations.
(5)
OTHER COORDINATE ORGANIZATIONS under the same head or (if independent) for the same purpose.
INTERNAL OPERATIONS (RELATIONSHIPS) (2)
(1)
Material (Physical or Ideas) come from SOURCES
Work is done to transform incoming material into the product of the organization.
(3)
RECIPIENTS receive and use the product (Physical or Mental)
(4)
Whole activity rests in or on THE PUBLIC.


Leader$_n$ does Pneuma$_n$ — (A+B+C), plus coordination of Assistants
The summation of functions in an Atomos$_n$ can never equal the whole Pneuma$_n$
Assistant Leader$_n$ for function A
Assistant Leader$_n$ for function B
Assistant Leader$_n$ for function C

Note: The hexagonal Atomos$_n$* is here converted into the rectangular form to permit of more readily showing a variable number of assistants. The whole *idea* (Pneuma$_n$) inside the rectangle is, by construction, identical to the whole *idea* (Pneuma$_n$) inside the hexagonal Atomos$_n$.
***Fig. No. 7**

THE ATOMOS$_n$
(Formed from any Pneuma$_n$)
(Showing idea relativity)
Figure No. 14

in to the specialty$_1$ where it is handled.

This completes the design of the Atomos$_x$. Let us look briefly at the Atomos$_n$.

Referring back to the pneumagenesis (Figure No. 4) it can be seen that a Pneuma$_n$ might be fixed at any of several points in the generation. It might be at Pneuma$_3$; others might be at Pneuma$_4$; still others might be located at Pneuma$_5$ level, and so on. Therefore the subscript "n" does not fix the relativity of Pneuma$_n$ in the structure unless we give its numerical subscript in addition to its subscript "n". For example, Pneuma$_{4(n)}$ means that this Pneuma is 4th from the top in the structure, and it is also at the end-of-the-line—at the bottom of the structure. It is necessary and convenient at times to start from the bottom of the structure and speak of relativity "up"; and in this case we refer to Pneuma$_{n,n-1,n-2,n-3,}$ and so on up to Pneuma$_{n-(n-1)}$—the latter of course being Pneuma$_1$. The Atomos$_n$ has of course, the same relativity as its Pneuma$_n$; and when the Atomos$_n$ is embodied to become an actual Team$_n$ this relativity is a prerequisite to effective communication "up" the structure in an orderly and all inclusive way.

Let us recall that none of the Atomoi$_x$ *do* anything in the sense of transforming their Pneuma into the act—they all *see to the doing* (plus other things as in the type mission for an Atomos$_x$). Thus the design of the Atomos$_n$ is in a different situation. It is more comparable to the organism and the family type structure that we have all been familiar with throughout the ages and which is implanted in our thinking.

The design of the Atomos$_n$ was really accomplished when the casual or open structure told us we had reached the end-of-the-line in the pneumagenesis. All that remains is to identify these ideas graphically with respect to the Pneuma symbol. This is shown in Figure No. 14, where functions A B and C are identified within the Pneuma$_n$ as appropriate for one mind. The remainder of the symbol is Pneuma$_n$—(A+B+C). It will aid thinking in the abstract to say that when these are embodied, a Leader$_n$ will have Pneuma$_n$—(A+B+C); and there will be an Assistant Leader$_n$ for A, an Assistant Leader$_n$ for B, and an Assistant Leader$_n$ for C. Thus the designed structure comes out to have lost the lord and serf, the master and servant, the pater-familias and familia, the boss and the bossed, and management and labor. The whole structure is "management" from top to bottom and bottom to top and there is no "labor." The man at the end-of-the-line "leads" himself to convert the Pneuma in his mind into the act of production.

The type (formula) missions within the Atomos$_n$ are shown in Figure No. 15.

Before we illustrate the actual construction of a going organization from this design, let us review briefly some salient features:

We started from the Pneuma$_1$ and generated the Pneuma Struc-

(*Continued on page* 43)

who:	**Pneuma$_n$—(A+B+C)**
what:	**discharges its responsibility for Pneuma$_n$**
where:	**in Mechos$_{n-1}$**
when:	**as Pneuma$_n$ requires**
how:	**by doing Pneuma$_n$—(A+B+C), *and* by coordinating functions A, B, C.**
why:	**in order to most effectively accomplish Pneuma$_{n-1}$.**
who:	**Function A (or B or C or . . . .)**
what:	**discharges its responsibility for Pneuma$_n$**
where:	**in Mechos$_{n-1}$**
when:	**as Pneuma$_n$ requires**
how:	**by doing Function A (or B or C or . . . .)**
why:	**in order to most effectively accomplish Pneuma$_{n-1}$.**

Note how the summation of these two type missions equals the mission of Atomos$_n$ as a single entity. (Fig. No. 10)
The number of functions varies from one to twenty, and sometimes more.

TWO TYPE ("DOING") MISSIONS IN AN ATOMOS$_n$
Figure No. 15

PRODUCTS

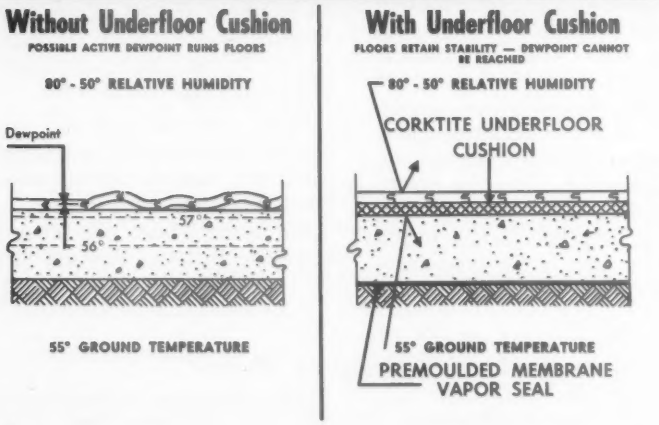
designed to deflate production Costs

As a service to OPERATING DEPARTMENTS and PURCHASING OFFICERS, ARMED FORCES MANAGEMENT will provide you with a selected list of manufacturers' products.

How to Use Armed Forces Management's Library–

Inserted in this issue, a postage free card is provided for your convenience in requesting descriptive and informative literature. This will be forwarded to you, without obligation. Many cost saving ideas are generated by Operating Departments that have referenced information on products available. Purchasing Officials will find this type of information invaluable. All that need be done is: fill in name and address, circle that which will assist you, and drop in the mail.

EFFECT OF TEMPERATURE VARIANCE AND CONDENSATION IN THE WOOD FLOOR OVER CONCRETE SLAB



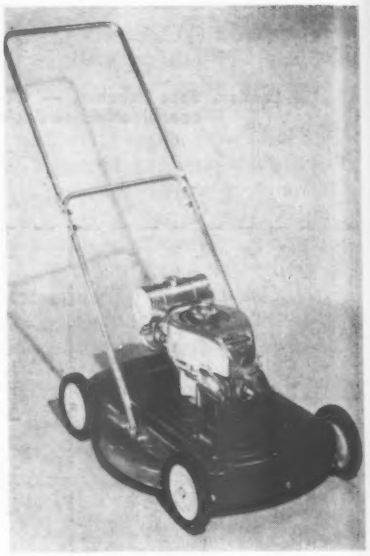
MOISTURE AND CONDENSATION CONTROL

W. R. Meadows, Incorporated (See cut) This time-honored manufacturer of SEALTIGHT products, has recently completed an exhaustive study in the hydrologic cycle and moisture migration, designed to control moisture and condensation in building structures with the latest techniques. It is now possible to purchase SEALTIGHT, eliminating the blistering and peeling of paint, warping and rotting of wood floors, and many other moisture targets, for less than the cost of normal maintenance. A complete descriptive brochure is available to base and post engineers interested in long-life maintenance-free construction.

For more facts request No. 1 on reply card

POWER MOWER AND MULCHER

General Industrial Company (See cut) Production of a new heavy-duty power mower and mulcher that is being offered at the low introductory price of $49.95, a



savings of $30.00 under the regular price, has recently been announced by this corporation. Designed with a 1¾ HP, fast-starting gasoline engine, the safety enclosed blade is fully surrounded by a sturdy steel housing. This remarkable new machine with its full 19″ cutting width, speeds lawn care jobs and eliminates forever the old-fashioned lawn cutting and leaf raking.

For more facts request No. 2 on reply card

COMPTOMETER-ADDING CALCULATING MACHINES

Felt & Tarrant Manufacturing Company A new catalog and price list is now available to cost-conscious installations with complete information on the full line of equipment. Studies have recently shown that maintenance costs on old equipment are not justified in view of the low cost of replacements. Modern business machines preclude duplication, and the new equipment, multi-purpose in design, will pay for itself in a few short months.

For more facts request No. 3 on reply card

TESTING AND SORTING MACHINE

J. W. Dice Company The new Model CE Cyclograph affords a rapid and inexpensive means of non-destructively testing and sorting accidentally mixed or incorrectly processed metal parts. The new Model CE Cyclograph is used as a "hand" sorter. A known and acceptable part is inserted in the test coil as a "standard" in adjusting

the Cyclograph. Unknowns then placed in the coil give the same meter reading if they are the same as the standard, a different reading if they are not. Several thousand can be sorted daily, and size and shape of parts presents no problem. Used on either ferrous or non-ferrous metals, the new equipment is coming into wide use throughout the country.

For more facts request No. 4 on reply card

SACRO-EASE POSTURE CUSHIONS

..McCarty Manufacturing Company (See cut) National Safety Council officials rate posture a vital factor in accident prevention. These well designed posture cushions are

WITHOUT SACRO-EASE–

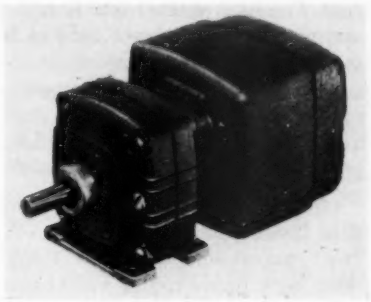
WITH SACRO-EASE–

compact, attractive and inexpensive. Back muscles are never under painful tension when posture cushions available for office, home, hospital, and all conventional and sports cars are used. Complete information without obligation is available to those of you interested in how it is possible to sit relaxed yet in perfect posture for many hours without discomfort.

For more facts request No. 5 on reply card

TACHOMETER TAKOFF HEAD

Metron Instrument Company (See cut) The new Tachometer Takeoff Head (Series 33), used with Metron Indicators, measure high speeds—5000 to 30,000 RPM—or low speeds—½ to 100 RPM, and have recently become available. Rugged construction gives ex-



tremely long life under continuous operation. No brushes, slip rings or other parts that need regular maintenance or replacement are used. The new double-pole, double throw (dpdt) switch together with a capacitor acts as a speed sensing element. When the takeoff shaft efficient gearing operates this speed sensing elemment. It produces a current exactly linear with respect to speed.

For more facts request No. 6 on reply card

INSURANCE HANDBOOK

Government Employees Insurance Company The new informative booklet has been prepared for drivers of U.S. Government owned or leased vehicles, which explains your responsibilities in the event of an accident. Premiums are exceptionally low, and this new type insurance is available to drivers of government vehicles. The newly prepared booklet, explaining these any many other questions, is available without cost or obligation.

For more facts request No. 7 on reply card

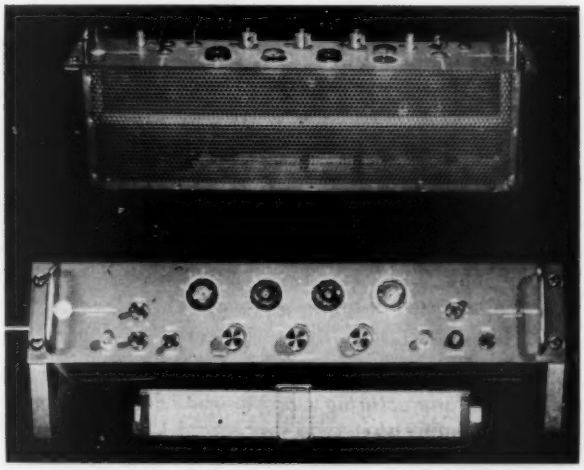
ENGINEERING DATA CATALOG

Star Cutter Company A new four-page, two-color, engineering data catalog describing the new Starbore carbide drills that produce precision smooth holes, is now available to interested organizations and individuals. The catalog gives complete application information including speeds and feeds, accuracy, life, coolant, machine tool and power requirements, sharpening and drill specifications.

For more facts request No. 8 on reply card

FREQUENCY COUNTER

Hupp Instrumation Corporation (See cut) The new Model 130 Frequency Counter is a truly compact events-per-unit-time instrument utilizing glow-tube decades and simplified circuitry to achieve exceptional reliability, sensitivity, and versatility in a volume less than 1/5 cubic foot. Designed for rack-mounting or portable use, the Model 130 measures 19 x 3½" inches across the panel and extends back only 5 inches. Counting intervals are 0.1 and 1.0 seconds and display time is variable from 0.1 to 5 seconds. At minimum display, five readings per second are obtained. Used in conjunction with suitable



transducers, the 130 will accurately measure pressure, flow, temperature, velocity, or any other physical variable which can be converted to a frequency analogue. Complete specifications are available.

For more facts request No. 9 on reply card

POWER BRUSH CUTTER

Southworth Machine Company Clearing of all kinds of brush, even under water, becomes a simple, low-cost operation with the new Senior Model Southworth Power Brush Cutter. It cuts grass, weeds, brush and even trees up to 10 inches in diameter, and unlike other power cutters, this powerful 2.8 h.p. lightweight machine comfortably fits on the operator's back leaving both hands free. More technical information and specifications are available without cost.

For more facts request No. 10 on reply card

GOVERNMENT SPECIFICATIONS, ADHESIVES, COATINGS AND SEALERS

Minnesota Mining and Manufacturing Company A new handy 14-page, 8 x 3½ inch folder listing official United States Government Specifications for a wide variety of adhesives, coatings and sealers is available to interested organizations and individuals. The folder lists, in file type form, various Military, Army, Navy and Federal specifications with the corresponding 3M adhesive, sealer or coating that meets government specification requirements. Also included is a specification cross reference section listing recent changes in specification designations to aid in correlating old and new specification numbers.

For more facts request No. 11 on reply card

MUTUAL INVESTMENT FUND FACTS

Brown, Madeira, and Company. This company, specializing in mutual investment funds, will send, without obligation, facts about conservative, middle-of-the-road, and aggressive types of investments and mutual funds.

For more facts request No. 12 on reply card

BELCO REPLACEMENT FAUCET STEMS

Miller Manufacturing Company. Leaking compression type faucets, lost water and excessive maintenance costs are gone forever with the installation of Belco ball bearing replacement stems, complete with bibb washers. To insure perfect replacement, stems are made to order from a sample sent in by the purchaser—housing authority, military installation or institution. Stems include the Belco valve seat unit. The moment the rubber faucet washer contacts the seat its turning action stops and the ball bearing takes up the load, exerting non-turning pressure on the washer seat. The bibb washer is only under compression and is not subject to cutting or grinding action.

For more facts request No. 13 on reply card

VISUAL MANAGEMENT CONTROL

Graphic Systems. This New York firm invites men interested in efficient management to get things done with Boardmaster Visual control which gives a graphic picture of operations, spotlighted in color, saves time, money, and stops errors.

For more facts request No. 14 on reply card

COMMON STOCK INVESTMENT

Hamilton Management Corp. Through Hamilton Funds, Inc., a managed common stock investment fund, this firm offers lump sum or monthly investment plans to fit any budget. Interested persons can inquire without obligation. Firm recently declared another quarterly dividend.

For more facts request No. 15 on reply card

FREE STORAGE LAYOUT SERVICE

Equipto Division of Aurora Equipment Co. Free layout service to assure better storage facilities for less money is available from Equipto. Take advantage of valuable advice on the number and kind of storage units to buy, furnished with complete floor plans and elevation drawings.

For more facts request No. 16 on reply card

ALL-PURPOSE HAT AND COAT RACKS

Vogel-Peterson Company. Snap-over hooks to replace hangers give double capacity in same area. Checkerette racks can be set up or taken down in a minute without nuts, bolts, or screws, are strongly built of welded heavy gauge steel.

For more facts request No. 17 on reply card

VISUAL CONTROL BOARD

Wassell Organization, Inc. Produc-trol not only schedules but automatically checks with time, line, and color control, has low original and upkeep cost.

For more facts request No. 18 on reply card

EFFICIENT SIRENS FOR MILITARY VEHICLES

Federal Sign and Signal Corporation. Specifying Federal sirens, available in 6 different classes and 34 different models, will insure procurement of an efficient signal and adequate warning device for military vehicles.

For more facts request No. 19 on reply card

PROTECTIVE APPAREL

Wheeler Protective Apparel, Inc. This leading manufacturer of protective rescue equipment announces the new Fire King with air-pak to help rescue units avoid the most disastrous consequences of fire. The apparel utilizes light aluminized asbestos and an efficient air pak breathing unit with capacity for extreme exertion of 15 minutes constant work inside the suit.

For more facts request No. 20 on reply card

6000 C. P. FLOODLIGHT

Wm. W. Lee & Son. Available on 4 to 8-foot telescopic stand or tank bracket mount, this floodlight with adjustable volume light is portable, safe, instant lighting, throws beam 250 x 100 feet.

For more facts request No. 21 on reply card

The Army Medical Research Laboratory has developed a portable X-ray unit, weighing only 48 pounds, for use on the battlefield. It can be carried on the back of a medical man and can produce a picture without electricity, water or a darkroom. A tiny piece of radioactive thulium powers the unit.

The whole Capitol building—wings and all—could be fitted into the area of one of the Pentagon's wedge-shaped sides.

ORGANIZATION

(*Continued from page* 39)

ture for the entire organization-to-be (or in being—for conversion). This is the basic relativity of ideas in their "natural" order and structure with a genetic affinity between them.

Then we started separately and independently to generate from each Pneuma the ideas to be identified within each Atomos as the basic unit of the organization, as the group of ideas, as one entity, as the "institutional mind" to perceive and handle the totality of any situation appropriate to the particular Pneuma.

Each idea within each Atomos has its pneuma as its responsibility; and each idea within each Atomos has its "formula" or type mission to guide its released energy (contribution) into an Atomos end product in such a way that the strength and unity of the Atomos is increased in use.

Each idea in the entire organizational structure is equally "important." Each idea in the entire organization has the same "recognition" by being identified, named, located in relativity to all other ideas, with its own particular pneuma, and with its own type mission describing what to *do* about it.

There is one more major feature of the structure that is important at this point—the natural ("informal") channels of communication.

Each Atomos has a genetic affinity of "lineal descent" to the Atomos above it and to the Atomoi below it. Each Atomos also has a "fraternal" affinity (first descendants of the same parent idea) to the immediately adjacent Atomoi. Each Atomos has a "first, second or third cousin" affinity for the more distant Atomoi in the structure. The expression of this affinity in communication is in formal, authoritative, Atomos end-product form. But there is more than that:

Since the $Atomos_x$ are all alike internally (by design) any one idea within an $Atomos_x$ has its counterpart in the $Atomos_{x-1}$, in the other $Atomoi_x$, and in the $Atomoi_{x+1}$. Between counterpart ideas there is a natural affinity, and thus we have "counterpart channels" of communication.

There are as many "counterpart" channels as there are identified ideas in an $Atomos_x$. Since a single idea within an Atomos cannot produce an Atomos end-product, the communication in counterpart channels is restricted to information, advice, and technique in a specially designed format so as to eliminate the possibility of its being mistaken for an Atomos end-product.

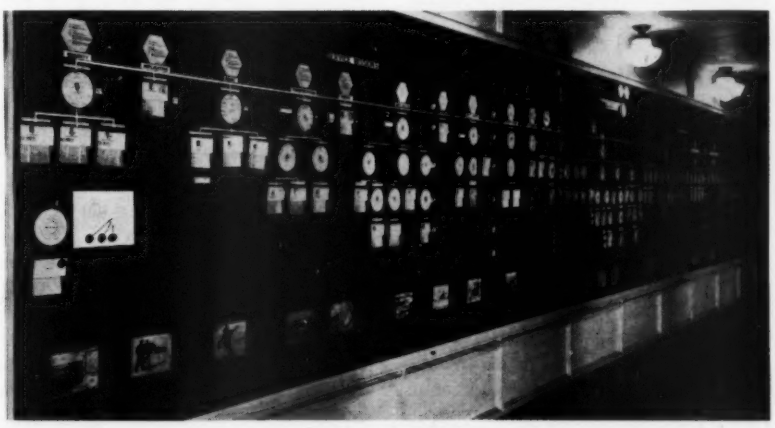
The last step in the design is to expand each idea into a complete position description (assuming it is to be embodied). This is a mechanical process of taking the pneuma (six-part statement) of each idea (position) and expanding each of the six parts into sufficient detail for complete understanding by a person not connected with the organization. This is what the position is to be "responsible for." Then take the formula (type) six-part mission that tells what the position is to *do* about its responsibility, and expand it into a sufficient detail for complete understanding. This expansion is commonly called the "duties". Thus the total description from the expansion is a complete statement of "responsibilities and duties." To take these descriptions, classify them, grade them and evaluate them for pay purposes is relatively simple and mechanical (assuming appropriate job standards are available). The established relativity and order in the structure, the similarity of all of the $Atomos_x$ and the existence of "formulas" for all positions—all of these make the classification and evaluation process quick and accurate.

We have omitted the development of the ideas (positions) of the service type such as clerical, administrative, typist, stenographic and so on. Each of these is worked out by a continuation of the generation process with each Atomos so that *every individual* position is equally important in having its complete identity, relativity, and order in the whole structure.

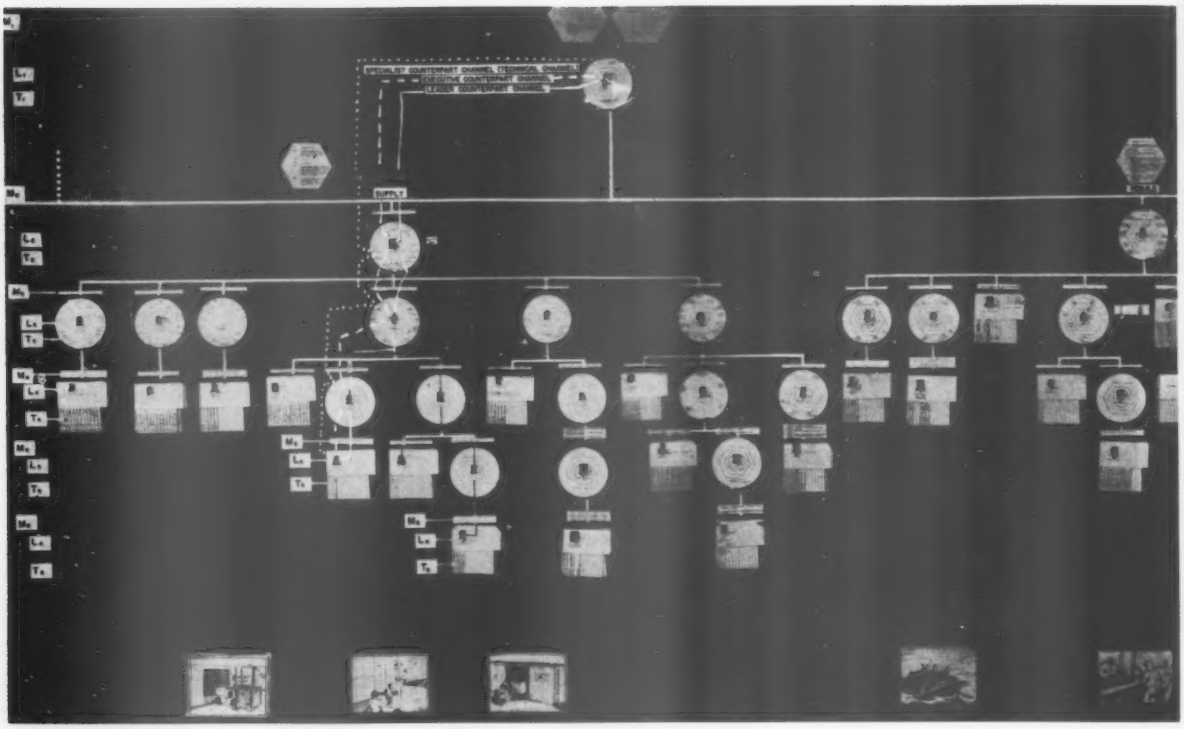
A conversion of terms is necessary as we pass from the design terminology for *ideas* to terminology for positions with people in them as the ideas are embodied (or to be embodied). Atomos becomes Team. Within a $Team_x$, in organizational language, the Basic Policy is embodied in a $Leader_x$; Complementary Policy is embodied in an Executive; Past, Present and Future are embodied in Assistants *to* the Executive; Cognizance of each of the six sets of relationships is embodied in Assistant Executives; and the Specialties are embodied in "Officers." In the $Team_n$, the $Pneuma_n$ (less identified portions) is embodied in a $Leader_n$; and the identified portions are embodied in $Assistant\ Leaders_n$.

The Design step is now complete, and Mr. Banks has just finished his explanation of a recently designed structure. (You will recall that we converted his specific application into the language of the general theory as he went through the steps in design). Concurrently with the working out of the design, the results were put together in one place to show the entire structure.

Let us now look at Figure No.



TEAM STRUCTURE
GRANITE CITY ENGINEER DEPOT
July, 1955
Figure No. 16



CENTER PORTION OF TEAM STRUCTURE
GRANITE CITY ENGINEER DEPOT
July 1955
Figure No. 17

16 where we see the organizational structure of the Granite City Engineer Depot as a designed "Team Structure" as it appeared near the end of the "Granite City Test."

The Depot is a civilian-manned, industrial type operation and includes a military organization in training of about 500 soldiers for a total Depot population of over 2,000 people. Each individual position of the total is shown in the Figure No. 16 with equal "importance," and with equal recognition in its full relativity to every other position within its team, and of course the full relativity of its Team to all other Teams is fully apparent.

Starting at the top center there is shown the Service Pneuma$_1$ and the Basic Pneuma$_1$. (On this display for local reasons the term "Mission" is used in lieu of "Pneuma"). Below the Pneuma$_1$ is the Team$_1$. Next below are the Pneuma$_2$ divided into two groups, the Basic Pneuma$_2$ on the right of the vertical broken line, and the Service Pneuma$_2$ on the left. Just below these Pneumina$_2$ are the Teams$_2$. Note that two of the Teams$_2$ are Teams$_{2(n)}$ as can be seen from their rectangular shape. Next below are the short title Pneuma$_3$ and below them are the Teams$_3$. Below Teams$_3$ the Teams are in transparent pockets, several to one pocket, and thus the "spread" of the structure is lost to the general impression. When interested in a given Team$_{4,\ 5\ or\ 6}$, it is a simple matter to take the Teams out of the transparent pockets and "spread" them in proper relativity on a table or other surface. At the extreme bottom of the display, in the large rectangles, are the typical acts of accomplishment of the Teams$_n$ to illustrate "closing the circuit" in the act of accomplishment. These acts of accomplishment then flow laterally to the right to leave the organization in the product to going out to recipients. Of course, the typical acts of the service missions go to the basic mission organizations as recipients of supporting service.

A closer view of the structure is shown in the center section (Figure No. 17). Note here the counterpart channels illustrated. The dotted line illustrates one Specialist counterpart channel; there are as many of these as there are Specialists. The dashed line illustrates the counterpart channel from Executive to Executive; there is only one of these since the Assistant Executives and the Assistants to the Executive use the same line. The narrow solid line illustrates the counterpart channel from Leader to Leader. Most of the business of the organization is transacted in these counterpart channels; and the issuance of formal Team end-products along the wide solid line from Team to Team is generally in confirmation of things already understood and agreed upon in principle. All of the counterpart channels are used with equal facility "up" or "down" the structure. The horizonal counterpart channels from Team to Team are not shown in this figure.

(*In the next and last installment we will see statistical indices of organizational health as correlated to the installation of* Atorgenics; *there will be indicators of the effect of* Atorgenics *on costs; and we will present the findings of competent inspections and on-the-ground examinations of the structure in operation. The derivation of the term Atorgenics" will be explained. And, finally,* Atorgenics *will be evaluated against the specifications for a theory of organization as drawn up by leading thinkers in the field.*)

Continued Next Month

Organization and Techniques of Management In the FBI

By John Edgar Hoover, *Director*

Federal Bureau of Investigation
United States Department of Justice

WALKING OUT of the office of Harlan Fiske Stone on the morning of May 10, 1924, I experienced mixed feelings. The Attorney General of the United States had just named me Acting Director of the organization now known as the Federal Bureau of Investigation. The elation which comes from being trusted to do a big job was mingled with a fairly clear knowledge of the complicated nature of the task before me. Mr. Stone had given me a guarantee that the work ahead—reorganizing and developing the investigative arm of the Department of Justice—was not to be hampered by politics. That positive assurance by a man of unquestioned integrity enabled me to progress on my own terms.

Just how do you proceed when you have placed in your hands such a responsibility? Where do you begin? Certainly the foundtion of a building is the vital element in the creation of a sound structure. Similarly, the quality of an organization and the course of its direction are determined by the standards on which it rests. As a weak foundation jeopardizes the edifice it upholds, absence of principle imperils any activity. George Washington expressed his knowledge of that eternal truth in positive fashion. His words to the Founding Fathers at the Constitutional Convention were simple and devout: "Let us raise a standard to which the wise and honest can repair; the rest is in the hands of God."

I have always believed that men worthy of the name will respond magnificently to the challenge of a cause which enlists their best in conscience, time, and effort. On the day that I became responsible for directing the Federal Bureau of Investigation, I determined to initiate standards which would be basic to the future development of a sound organization. Those standards had to be of such height that only persons of superb moral, mental and phyysical stature could measure up to their requirements.

Standards, however, cannot be achieived by authoritative command. They must be reached, instead, through a process of development—and such a process is beset with obstacles. Indeed, in this instance, it was one necessitating complete reorganization and change.

At the time that I was designated Acting Director of the FBI there were six hundred fifty-seven employees. With the approval of the Attorney General, a complete reorganization was begun. On May 27, a circular order instructing that all investigative activity be confined to certain violations over which the Department of Justice and the FBI had jurisdiction was issued. This was the beginning of numerous changes in policy which occurred during the next few years.

We instituted standardized reporting procedures; fixed age and educational qualifications for personnel; reorganized field offices and initiated regular inspections. A policy of promotion predicated solely upon merit was inaugurated. New divisions were created and a system of uniform personnel efficiency records was instituted. Thorough personnel investigations were insisted upon. A Manual of Rules and Regulations (since revised many times), was written and

a Special Agent training course was inaugurated.

These and other innovations were not fixed and final. New ideas were incorporated into policy and the foundation of the present Federal Bureau of Investigation solidified. The process was not an overnight accomplishment. We set ourselves short-range goals, then struggled to achieve them. Once we

had done so, we denied ourselves the luxury of compromise.

Whatever effectiveness the present organization has today, derives, in large part, from the fact that the Federal Bureau of Investigation has developed and maintained a set of extremely high standards which are an integral part of the FBI. This is one of the major elements enabling the achievement of maximum results with minimum expense.

There is another element which contributes to the same end. This is the consistent application of a simple question—a question which is the measure of judgment utilized in connection with the expenditure of funds. We do not ask ourselves if the item being considered for purchase is desirable; rather we ask, "Is it essential?"

Cost consciousness is constantly impressed upon every employee. Each one knows, however, that efficiency is not to be made a sacrifice to false economy. We cannot afford to be "penny-wise and pound-foolish."

We believe in order that the organization may discharge its difficult and vital obligations properly, the FBI must not be allowed to become unwieldy through excessive expansion. The very nature of investigative work depends upon mobility and precision. These elements can best be achieved with a force of competent, highly trained individuals sufficiently limited in number that control is constant and accountability absolute. Personnel selection and organization are, therefore, of utmost consequence today.

There are, in the entire Federal Bureau of Investigation, less than 14,000 individuals. Approximately 6,000 of these are Special Agents.

Selection of personnel is a primary key to effective operation in any organization. We feel that our personnel do not work for the FBI, but rather we consider that they *are* the FBI. Our recruitment and selection program is, therefore, calculated to enlist employees of fine quality—men and women who have a capacity for growth. The Agent applicant in particular must meet rigid physical and educational requirements; he must have a real interest in a career of service, and his private life must withstand the closest scrutiny.

The applicant learns at the outset that the work of law enforcement requires selfllessness and dedication. He knows from the beginning that there is no room in the FBI for the glory-seeker. Fully informed of the duties and responsibilities devolving upon all FBI employees from the outset, he begins his career of servicec on the basis of solid understanding. He learns, first of all, the philosophy which is the motivating force of the FBI. He must absorb general policy and understand the organization of the FBI. The latter is clear-cut and simple. Headquarters is located in the United States Department of Justice Building in Washington, D. C. Fifty-two Field Offices are located in major cities throughout the United States, Alaska, Hawaii and Puerto Rico. Each is under the direct supervision of a Special Agent in Charge, who, in turn, is supervised and receives directions from headquarters. Headquarters, itself, is organized on a divisional basis in as functional a manner as we have been able to devise. The heads of each division are responsible for all matters within their sphere of operations and these officials are directly accountable to me.

Personnel and organization are important, but they are not everything. Training is vital if investigative operations are to be effective. The "tools of the trade" are made available to our Special Agents in a course of training which is unique. Practical to the nth degree, formal training is a combination of theory and practical experience.

The course of training upon which the new employee embarks on entering the FBI does not cease in actual fact until the conclusion of employment. It is a continuous process through which the employee is integrated into the closely knit, functional body of the organization. This process, from the initial sixteen-week group training afforded Special Agents to the brief indoctrination classes for certain noninvestigative personnel, is comprehensive and a part of each employee's life, for advancement in the FBI is contingent upon knowledge, ability and effectively expended effort. Promotions are made from within and they are based on merit alone. Every employee knows that his superior has "gone through the mill," and that his position was gained under exactly the same conditions which he himself is experiencing.

Procedures, rules, and regulations throughout the entire FBI are uniform. Discipline, also, is uniform. The employee knows he will be held accountable for the error he makes. He also knows that his superior accomplishments will be recognized. He knows, too, that disciplinary action—never taken until all the facts are known—in his case will be neither more nor less stringent than that applied in any similar case involving another employee. If the individual is not satisfied with the judgment accorded, he is aware that he can appeal the decision. Every employee of the FBI knows that the door of my office is open and that on his request I will see him.

We encourage every employee to learn, to improve and to advance.. Even in the course of his initial training, however, he is held fully accountable for the quality of his work. In many phases of FBI work, particularly where life, liberty and reputation are at stake, accuracy is an absolute essential. For example, when a fingerprint identification is made, that identification is verified by an experienced employee. When an Agent's investigative reports are completed, they are closely scrutinized by his supervisor.

Accountability is the theme of FBI organization. Clerks and stenographers are responsible to Special Agent Supervisors. Special Agents are accountable to the Special Agents in charge of the various Field Offices, who in turn are accountable to FBI Headquarters. The officials at FBI Headquarters, as I said before, are responsible to me.

Strict accountability throughout the chain of command is of vital importance to efficient operation. It helps the Federal Bureau of Investigation retain the sharp edge of precision essential to the proper discharge of vital obligations.

It is the system of accountability and the FBI standards which in my opinion create the esprit de corps

of FBI employees. There are other reasons also. Foremost among them is the fact that our people have an abundance of enthusiasm. They want to be a part of good law enforcement. They also have a keen regard for the honor of the group they represent.

Both the spirit and intelligence of FBI personnel make them amenable to the discipline required of those engaged in the demanding work of law enforcement. The patterns of discipline and standardization presently utilized in FBI operations have developed with the growth of the organization. Operations have been systematized through use of standard forms and through the uniform filing systems utilized. The result of this standardization has been flexibility. Inasmuch as Agents in all offices operate under the same rules and regulations, an Agent can be transferred from office to office as the need requires without loss or detriment to the service. This flexibility enables a relatively small group of men to discharge investigative obligations in an immense area. It insures against the unwieldiness which is an inevitable accompaniment of expansion.

The system of inspection utilized in the FBI enables us to maintain uniform standards. The purpose of the whole system could be summed up in the words, "appraise and improve." We have striven to make accuracy and thoroughness keynotes of the organization. The absence of either is detected promptly through our regular inspections.

Constant re-evaluation of the current setup, with the view toward finding areas where improvements may be instituted, helps the Federal Bureau of Investigation to function with an economy of time, effort and money. It helps in the attainment of maximum standards of production, in the elimination of obsolete procedures, in the streamlining of investigative operations, in the correction of delinquencies, and in the curtailment of expenditures.

As a technique of management, our system of inspection not only covers the actual work of the Federal Bureau of Investigation; it also is a method of ascertaining that all facilities are functioning at maximum efficiency.

The physical condition of the individual office, the individual desk, even the individual workbox, lies within the purview of the inspection system. And this system has had the result of effecting major economies without jeopardizing the total effort and objective of the FBI. For example, in investigative work, speed is of the essence. Numerous emergencies require the utilization of long-distance lines. Before a call is made, the caller is expected to have a well-organized outline—either in his mind or on paper—ready so that it will take him a minimum of time to convey necessary instructions and obtain essential information. When it becomes apparent that excessive time has been consumed in the course of a call, an inquiry is made.

We have found that accountability in minor matters adds up to efficiency and economy in over-all operations. We have found, also, that in our determined effort to avoid excessive expenditures, our personnel are wholeheartedly cooperative. In instance after instance employee suggestions have helped us trim expenditures and streamline operations. Indeed, we have a "Suggestion Program" which has been most successful.

In the FBI, all activities are subject to evaluation. When we make a mistake, we want to know what caused it. We want to find out how we can correct it. Beyond that, we want to know what changes in policy are necessary to prevent its recurrence. Similarly, when we have an unusual accomplishment to our credit, we strive to find if other action would have yielded even greater results. Re-evaluation is constant.

In addition to evaluating past action, we strive to anticipate requirements for the future. Our postwar planning was done before the war concluded, and as a result the transition from wartime to peacetime activity was effortless.

We in the FBI firmly believe in accountability. By this I do not mean solely the accountability inherent in our annual appearance before Appropriations Committees of Congress to justify expenditures. Rather, as a service agency, we feel that we are accountable to all the people, for ours is a public stewardship and a public trust.

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NATION'S DEFENSE SYSTEM

Navy's Skyraider Order Extended One Year

EL SEGUNDO, Calif.—A new contract for an advanced version of the Navy's famed Skyraider series announced today by the Douglas Aircraft company extend for at least another year the longest continuous deliveries of any combat airplane now in production.

T. E. Springer, vice president-general manager of the company's El Segundo Division, said the new Skyraider will be known as the AD-7. Deliveries of the latest model are scheduled to begin in August, 1956, following the AD-6s down the production line.

Approximately 3,000 of these carrier-based attack bombers have been built since 1946, and the AD-7 will be the 50th version of the popular "Able-Dog" series since the prototype first took to the air in March, 1945.

October 26 will be the 39th birthday of the Second Infantry Division.

New Military Supply Plan To Lump Bulk Buying

High Pentagon officials are busy hammering out final details of a plan to give each military service complete responsibility for the purchase and supply of certain commodities for all the services.

Called the "Single Manager Plan," it is designed as the Defense Department's answer to demands for a fourth service of supply. It is in line with some of the objectives of the Hoover Commission.

The system was tested last November by assigning to the Army the annual $1.3 billion worth of military food purchases.

The food assignment has worked so successfully that the system now will be extended to other lines.

Army to Buy Clothing

The new program assigns all clothing purchasing to the Army.

Medical supplies and petroleum, oil and lubricants will be bought by the Navy.

Photographic equipment purchases will be assigned to the Air Force.

Military land transportation activities also will be placed under the Army. That action will abolish three separate central rate groups and claims offices and consolidate them into one office, for instance.

The system will be applied immediately to all Army, Navy, Air Force and Marine Corps depot stocks held in the United States.

Called "Opening Gun"

Deputy Defense Secretary Ruben B. Robertson, Jr., called the move "an opening gun" in a completely new approach to the multi-billion-dollar military purchasing programs, which have become cumbersome over the years.

Consideration has been given to assignment of all aircraft purchasing to the Air Force. But it is felt that this program is some distance in the future.

Assignments encompass the entire supply field, from research and development through issue or disposal, including cataloging, standardization, requirements determination, procurement, production, inspection, storage, distribution, transportation and maintenance.

Its purpose is to reduce inventories and eliminate unnecessary duplication and overlapping of functions within the military supply system, provide the highest effectiveness in supply at the least cost and to provide a single management control of wholesale stocks for the military establishment as a whole.

Under it, the Secretary of a military department acts as a single manager for a particular commodity. Ownership of all stocks is transferred to him. After assessing requirements and checking them against what he owns, he buys needed supplies. Then, when other services require those items, they purchase them from him.

Air Force Places More Matador Orders

The Air Force placed additional orders for a substantial quantity of the TM-61 Matador tactical missile according to an announcement by the Martin Company, manufacturers of the Matador.

The Matador is about the same size and weight of a jet fighter. The Matador program has been called the "bargain basement" missile by Air Force officials. New manufacturing techniques have resulted in the Matador being the lowest cost in dollars per airframe-pound being produced for the Air Force.

Much of the Matador's wing and tail, as well as some interior structure, is composed of an aluminum honeycomb material to which the covering skin is bound by an adhesive material.

Wing construction, using semi-skilled workmen, is four times as fast as the conventional fabrication process. Adhesive bonding eliminates drilling and tapping of hundreds of bolts in joining wing sections.

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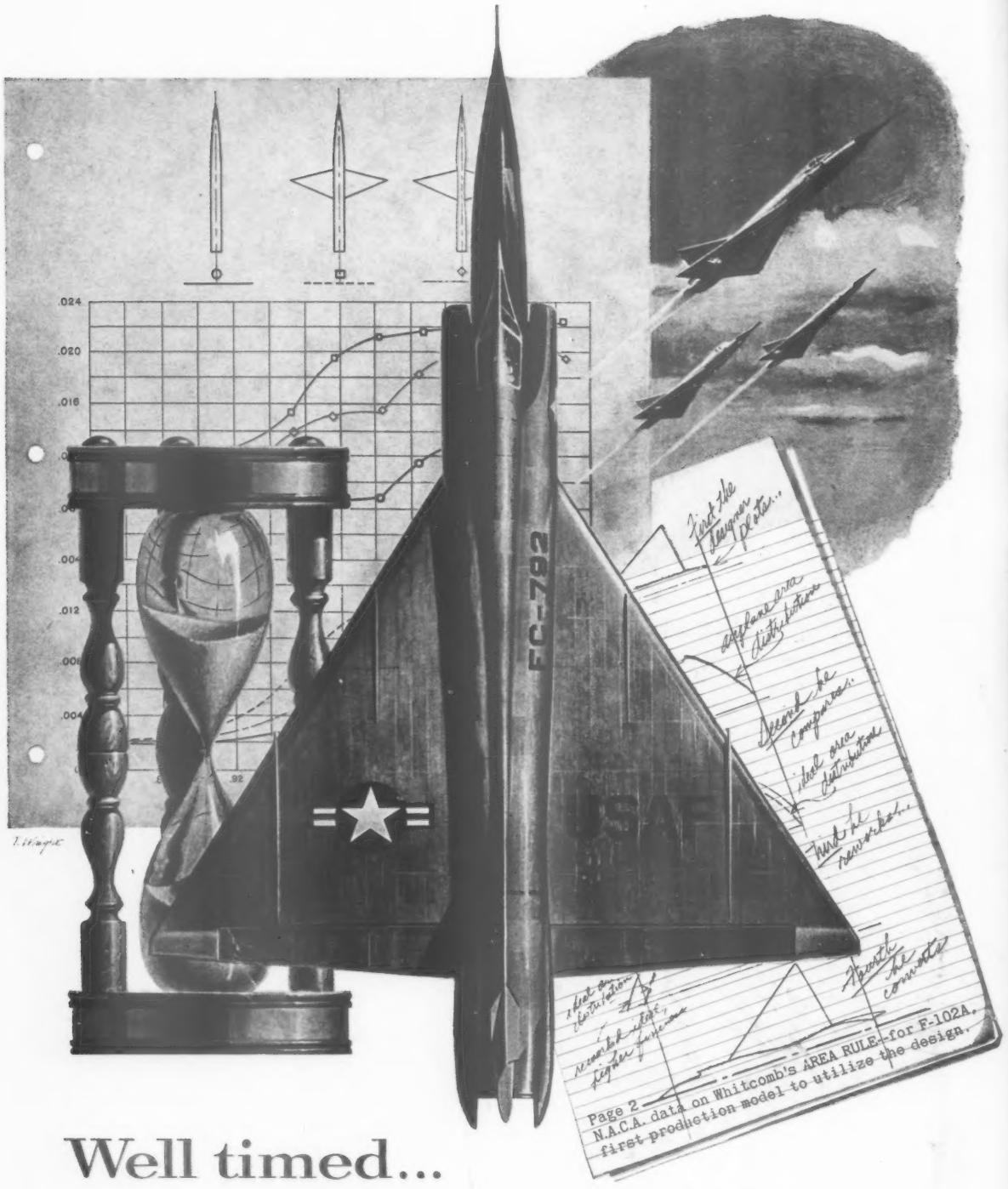

Well timed...

Research and development cut the time between *needing* and *having* Convair's supersonic F-102A all-weather interceptor. Application of the AREA RULE gave the F-102A an hour-glass shape, enabling it to attain even higher performance into the supersonic speed range!

A result of extensive design, testing and re-designing, the delta-wing F-102A is now being produced in quantity for the U.S.A.F. Air Defense Command – evidence again of Convair's *engineering to the Nth power!*

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